Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

VOLUME XI. NEW-YORK, MARCH 29, 1856. NUMBER 29.

THE

Scientific American,

PUBLISHED WEEKLY

At 128 Fulton Street N. Y. (Sun Buildings.)

BY MUNN & COMPANY.

O D MUNN, S. H. WALES A. E. BEACH.

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Machine for Sweeping the Streets.

For many years past the aid of mechanism has been employed in Europe for cleaning the principal thoroughfares of the larger cities but it is only within a comparatively short period that such apparatuses have been regularly introduced in this country. Indeed, Philadelphia, we believe, is the only city where street sweeping machines have found a permanent employment. Last year an attempt was made to introduce them into New York, and, for a season, one portion of the city was assigned to their use. The locality thus set off soon presented a cleanly appearance previously unknown, which was easily maintained as long as the machines were employed. In our opinion the time is not far distant when hand sweeping in the streets will be wholly superseded by mechanism. Its liberal adoption will contribute greatly to the health and neatness of our towns and cities.

The machines heretofore used in this country are, to a great extent, copied from those employed in London. They consist of large boxed up vehicles, the sweeping being done by a revolving brush, which sweeps the dirt up an inclined plane into the box. Whenever the box fills, the machine is taken away and its load is dumped. The vehicles in question are large, heavy, and clumsy; and in most cases the power necessary for operation is so great as to impose very severe tasks upon the horses.

The revolving brush is, to some extent, objectionable, one reason being that it cannot do clean work. Its high velocity carries a portion of the dirt clear over and throws it back upon the ground; this is especially apt to occur when the ground is a little muddy or wet. This kind of machine also creates considerable dust unless the street is well moistened with water.

In the improvements herewith illustrated the inventors have endeavored to avoid all of the objections named, and also to obtain additional advantages, unknown in any other apparatus for the same purpose.

The machine consists of a light three wheeled vehicle, of the general form exhibited in the engraving. A A are the driving wheels, by which all the sweeping machinery is put in motion. B is a steering wheel, used to support and guide the back end of the frame. Wheel B is ingeniously connected with an upright crank standard, C, in front, on the draft tongue of the machine. The cranks of B and C are connected by means of rod D, which is slotted, and has a fulcrum at E, as shown, therefore, whenever the tongue on which standard, C, rests is moved, the steering wheel, B, will be correspondently turned; the machine is thus enabled to describe a very short circle, and to turn with great ease.

The sweeping is done by means of reciprocating brooms, F, which move back and forth over the surface of the ground, sweeping the dirt up the small inclined leaf, G, on to the endless revolving belt, H; the latter carries the dirt to one side of the machine, and deposits it on the ground again, in winrows, as shown; thus collected it is easily shovelled up into dumping carts and taken away. I is a shaft, which gives motion, through suitable gearing, to the belt, H. Shaft I receives its power from the main shaft, J, with which it connects, by means of pinions. These pinions are connected with clutches, and the latter are operated by the lever, K. When it is desired to change the direction of belt, H, so as to form the dirt winrows on the other side of the machine, the driver moves lever K. By the same lever the whole machinery may be instantly thrown out of gear and stopped.

The brooms, F, are all separate; their shanks, F′, are attached to the cross bar, L, the ends of which fasten to the connecting rod, M. The broom shanks, F′, are adjusted by the screws, L′, so that if one broom is shorter, or becomes worn, more than another, it may be quickly let down to an even line with the others, or a new broom substituted. The brooms have a spring connection with their bar, L, (not shown) which permits them, when stones or other obstructions happen to be in the way, to spring back, and thus pass over the impediment; each broom being separate acts independently, so that if the obstacle presents itself before only one broom the position of the others will not be altered. The angle at which the brooms are set may be easily varied, so as to cause them to sweep obliquely, if desired. This separate adjustment of each broom is an important and valuable feature.

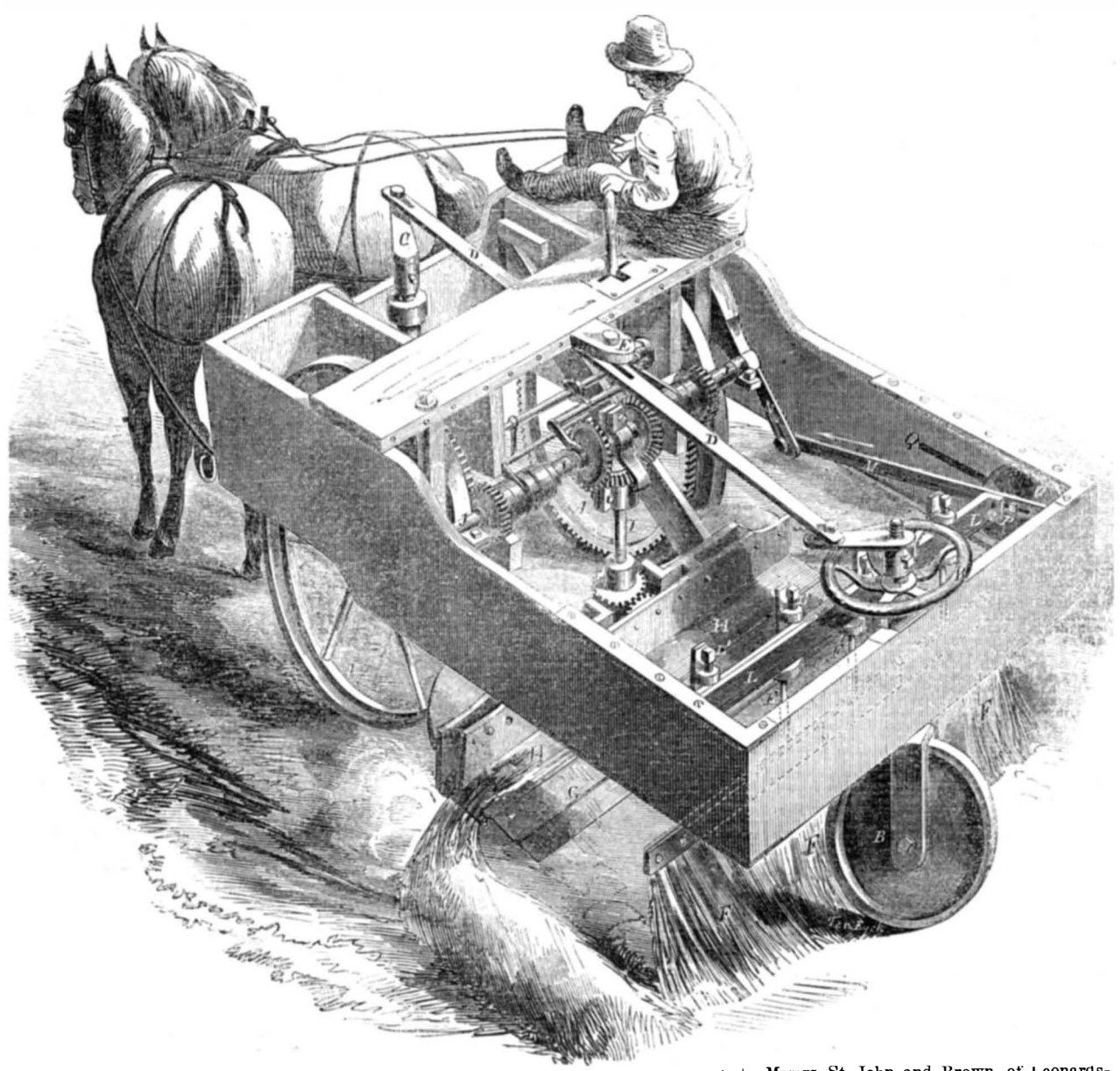
Bar L receives reciprocating motion from rod M and crank N, the latter being attached to main shaft J. One end of rod M is attached to wheel O, the pin of which, P, traverses in slot Q. In the forward movement of rod M the broom bar, L, is depressed, and the brooms thus brought in contact with the ground; on the backward movement of M the broom bar, L, is elevated, and the brooms lifted from the earth; this motion is almost exactly the same as that given to a broom by a person sweeping in the common manner. It must be obvious that such an arrangement insures clean and thorough work.

The hight of the back end of the machine is regulated by turning the hand nut, R, which is attached to the shank of wheel, B; the pressure of the brooms upon the ground is thus adjusted with great convenience.

If desirable, scrapers may be substituted in place of the brooms, and mud may be thus removed with great facility. The elasticity given to each broom shank would also render the scrapers effective. For some of the Western cities this arrangement might often be valuable; in New York it certainly would.

This machine appears to combine ususual facilities and capabilities. It is simple and strong in all its parts; light and easy of draft; convenient and economical in use; thorough and effective under nearly all circumstances and conditions of the streets; it strikes us as being much superior to any other machines of the same class that we have seen; its merits, we believe, will sooner or later give it a very extensive introduction. Good street sweeping machines are wanted in nearly every city in the country; we shall be disappointed if the present improvement does not carry off the palm.

IMPROVED STREET SWEEPING MACHINE.



Messrs. St. John and Brown, of Leonardsville, N. Y., are the inventors and patentees; from them any further information can be obtained Their patent bears date Nov. 20, 1855.

Preserving Fur.

A solution of alum and corrosive sublimate applied to fur, keeps it from coming off. An ounce of corrosive sublimate and an ounce of alum are dissolved in a pint of rain water, and this is applied to the roots of the fur with a sponge; and if possible it should be also applied on the inside of the fur. This solution applied to fur capes, victorines, &c., before they are laid past during warm weather, it is said, will effectually prevent the attacks of moths. Many valuable articles of fur are destroyed every season by moths; if such articles are treated as described, then hung up to dry in a room for a few days; they may be then wrapped in glazed linen, and laid past with perfect safety. The corrosive sublimate being a virulent poison, is the grand protective. It must be kept out of the reach of children and thoughtless persons.

A Good Notice on Both Sides.

A correspondent—J. Gray—writing to us from Dundas, C. W., says: "I got one of Carpenter's Rotary Pumps through a notice I saw in your paper; it is invaluable; has been up six months, pumping hot water every day, and I have never touched a screw about it. It has paid for itself and my paper, long ago."

A little sugar dissolved in any writing ink changes it into a suitable copying ink.

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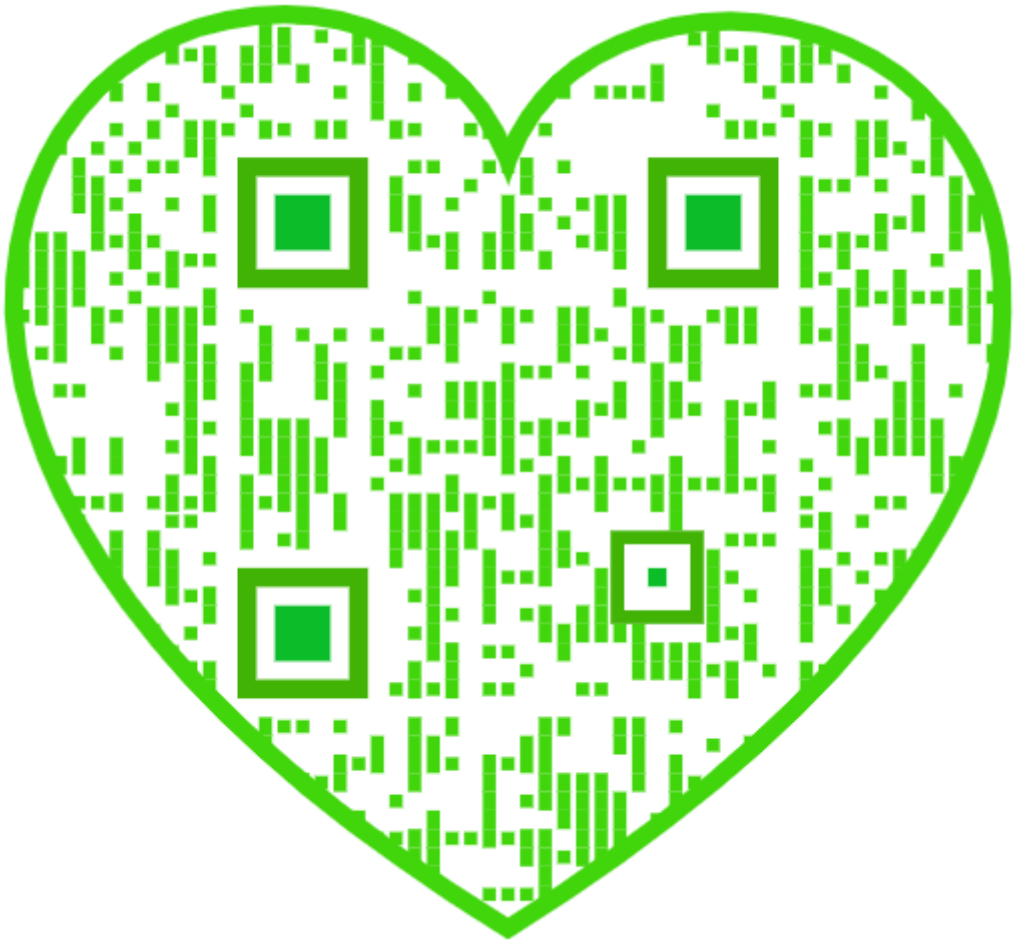

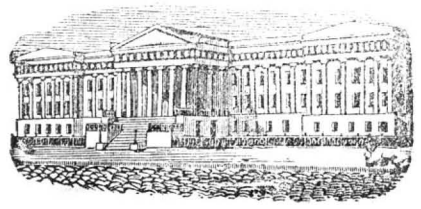

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 18 1856.

WELDING STEEL—Homer Anderson, of Garratsville, N. Y.: I am aware that various alkaline substances, both simple and compound, have been used as fluxes and soldering solutions.

But I claim the compound of sulphate of soda and carbonate of soda, made up and used for welding metal surfaces, as set forth.

BENCH PLANE—Lewis C. Ashley, of Troy, N. Y.: I do not broadly claim combining a metallic throat piece with a bench plane, in such a manner that the discharging aperture for the shavings shall not be enlarged or rendered imperfect by the wearing away of the plane stock.

I claim combining a metallic throat-piece with a plane stock in a manner independent of the plane-iron, substantially as described, to keep the mouth of the throat of the plane perfect as the plane stock shall wear away.

HERNIAL TRUSSES—John Broiles, of Madison Co., Ala.: I claim the peculiar adaptation of the steel ribbon to the body of the patient by making its lower edge flared out, the block or circle end flared out on its upper edge for about two inches, the strap end slightly curved upward and the block end curved downwards and outwards on its upper edge, in combination with a pear-shaped pad having a slice taken off, commencing at the outer edge of the base and continued to about two-thirds its length towards the seam, thus forming a broad plane surface to be applied to the body of the patient.

COOKING BY GAS—James B. Blake, of Worcester, Mass.: I claim the described roaster and boiler, constructed and operating in the manner substantially as set forth.

DUMB JOCKEY—Samuel Blackwell, of Oxford Street, London. Patented in England March 9, 1853: I claim making the cross and saddle-tree of gutta percha, and thus a new article of manufacture, one possessing advantages, as specified.

HERMETICALLY SEALING PRESERVE CANS—Charles Branwhite, of New York City: I claim confining the top of the can, E, between bearing surfaces by means of the collar, a, and screw, b, as described, thereby dispensing with solder or cement in forming a joint.

I also claim the peculiar form given to the internal and external bearing surfaces of this attachment for closing a can, when formed, combined and used as set forth.

GRAIN AND GRASS HARVESTERS—Thomas D. Burrall, of Geneva, N. Y.: I am well aware that single gearing has been used in a variety of forms, therefore I do not claim any such arrangement in itself, but I am not aware that any arrangement of single gearing has ever before been constructed in the manner described and shown, wherein by the use of a shaft with a bent arm on the end the line shaft, f, can be carried close to the main driving wheel, and the pinion, i, be so far removed from the fixed journal, 5, that the same can be thrown in or out of gear with ease, and at the same time a small pinion and fast motion can be used, which could not be accomplished without the use of the bent arm to the shaft, 1, in the manner set forth.

1st, I claim the shoe piece, v, and rack, 14, to adjust the hight of the outer end of the finger-board, substantially as specified.

2d, I claim the arrangement of the shaft, f, in the journal, 5, with its pinion, i, taking the wheel, k, when combined with the bent arm, 2, in the manner and for the purposes specified.

CARRIAGE COUPLING—Thomas Chope, of Detroit, Mich.: I claim attaching the perch of a vehicle to the front axle in a manner which will enable it to turn or rock, by means of a slotted T-shaped bar which is attached to the front axle by means of clips, g, and the sides, o and a, both working in the slots at right angles, as shown, substantially as described.

THRASHING MACHINE—Hiram Clark, of Princeton, Mass.: I do not claim the precise form of any of the parts, nor the use of feed rolls and aprons in thrashing machines, as I am aware such have been used.

But I claim the use of the pieces, H and F, for separating the grain by an action similar to that of a flail, in connection with the rolls and aprons or similar device, when constructed and operating in the manner and for the purposes set forth and described.

MOWING MACHINES—Samuel Comfort, Jr., of Morrisville, Pa.: I am aware that endless chains of knives have been heretofore used in connection with mowing machines, arranged, however, to traverse horizontally and confined to the cutter bar, which involves the necessity of having the latter of inconvenient width. By my arrangement the cutter bar is advantageously narrow and by a simple and light system of gearing I am enabled to operate the chain at a most effective speed.

I do not claim the use of endless chains of cutters for mowing machines, nor any particular method of constructing such chains.

But I claim the employment in mowing machines of an endless chain of cutters, which shall traverse along the cutter bar, and at a sufficient distance above the same to allow the mown grass to drop between, the said chain, being operated substantially in the manner set forth.

CORKING BOTTLES—Henry N. Degraw, of Piermont, N. Y.: I do not confine myself to any precise form of the cork holder, T, for other devices may be employed for the same purpose and operated in the same manner.

I do not claim the piston, H, and cylinder, G, operating as shown, for the purpose of placing the corks in the bottles, for they have been previously used.

But I claim securing corks in bottles or other vessels containing liquids charged or impregnated mechanically with carbonic acid gas, by having proper cork holders, T, attached to the bottles or vessels, and closing the jaws of the same by the levers, R h h, and jaws, P P, or other analogous devices immediately after the corks are forced into the bottles by the piston, H, so that the holders will secure the corks in the bottles as soon as the piston is withdrawn from them, whereby the corks are secured in the bottles without removing the bottles from the bed or platform of the apparatus, and consequently the operation of charging the bottles with gas, placing the corks therein, and securing them in the bottles performed at one operation, as described.

FIREPLACES—Calvin Dodge, of Pittsburgh, Pa.: I do not claim the contracting the throat or vent of the chimney, as that is well known as a device.

But I claim the use of a deep recess or chember placed back of the fire basket of the grate and out of the reach of the draft, in combination with the horizontal covering over the recess and fire basket extending down below the mouth of the chimney, constructed and arranged substantially as described, for the purpose of consuming the smoke and causing the ignition of the gas, which would otherwise be lost and thus increasing the amount of heat thrown into the room and by the slow combustion of the fire, effecting a great saving of fuel.

SOWING MACHINES—John German and C. B. Hoyt, of Oriskany Falls, N. Y.: We do not claim the reciprocating slide, D, nor operating said slide by an elbow lever and pins attached to the wheels, B.

But we claim having the elbow lever, G, upon a screw rod, H, so that said lever may be moved in and out of line with a portion or all the pins, a, on the wheel, B, for the purpose of causing the slide, D, to be operated faster or slower, or to remain stationary, as described.

INKSTAND—R. Gleason, of Dorchester, Mass.: I claim the use of the hollow elastic body operating in the manner set forth, in combination with the peculiar valve employed for the purpose of retaining the ink within the cup, as set farth.

HARVESTERS—Eliakim B. Forbush, of Buffalo, N. Y.: First, I claim the adjustable shoe, E, for the purpose of leveling the platform, constructed and arranged substantially as described.

Second, I claim suspending the pole to which the team is attached from a hinged journal upon the axle of the driving wheel in order that the draft of the team when moving forward may be directly from the axle of the driving wheel (leaving the frame, finger bar, and cutters free to oscillate and independent of the pole and the draft of the team) and also when backing; the power of the team may be exerted upon the frame in the rear of and below the axle of the driving wheel, substantially as described.

STEAM BOILERS—Jacob Frick, of Philadelphia, Pa.: I do not claim the combining of a check valve and stop-cock in one instrument, the same being in common use.

But I claim, first, arranging substantially in the manner set forth a check valve and stop and blow off valve in one instrument, for steam boilers, for the purpose of avoiding the attachment of the separate and distinct connection hitherto employed for the same purpose,

Second, I claim the pressure valve, M, with its weighted lever as connected with the alarm valve and as arranged with the check and stop valve, the whole being constructed and operating in the manner and for the purposes set forth.

NUT MACHINE—Robert Griffiths, of Allegheny City, Pa.: I claim the use of the compressors, M, punchers, p, saws, h, cams, n and g, levers, o and e, cranked and traveling head, b, constructed, arranged, and operating as described, for the purpose of making nuts from heated bars, as set forth.

HARVESTERS' CUTTERS—Horace L. Hervey, of Quincy Ill.: I claim furnishing the cutter bar with a series of inclined blades or knives, in combination with the inclined blocks and roller, d, or their equivalents, for giving to said cutters or cutter bar an oblique cut.

MORTISING TOOL—A. C. Hitchcock and C. H. Amidon, of Greenfield, Mass.; We are aware that tools similarly constructed have been previously used for the same purpose, screw auger bits have been employed and the tools consequently operated imperfectly, as the hollow chisels would soon become clogged with chips, the auger bits cutting off large chips. By our improvement this difficulty is obviated.

We do not claim a hollow chisel having a bit placed in it, irrespective of the form of bit used, and the slotted chisel.

We claim the combination of the bit, C, constructed as described, with the hollow slotted chisel, A, for the purposes set forth.

ROTARY PLANING KNIVES—Daniel L. Hurlbut, of Utica, N. Y.: I claim the arrangement of the cutters and the manner of securing them to the cutter rim of the wheel, substantially as set forth.

ILLUMINATING GRATING—Joshua K. Ingalls, of Brooklyn, N. Y.: I claim, first, the spheroidal lens or pane with rounded edges set in gearing or perforated plates of wood or metal, set forth.

Second, the grating of wood or metal with tapering apertures and glazed with lens or panes of the form, and in the method and for the purposes set forth.

WINDOW SHADES—Edward R. Kernan, of Pittsburgh, Pa.: I claim the making of flexible or pliable and semi-transparent oil cloth for window shades and other similar purposes by the series of processes described.

CHURNS—Lucius Leavenworth, of Trumansburg, N. Y.; I claim the arrangement of the cords or bands attached to the pulley and also to the staff, being wound on the staff, to give a required rotary motion, as described.

SELF-REGULATING WIND WHEEL—A. Lempcke, of Pleasant Mount, Pa.: I do not claim separately the spiral spring, I, attached to the sails or wings, for that has been previously used.

But I claim the spiral spring, I, or its equivalent, in combination with the weighted levers, J, arranged substantially as shown for the purpose specified.

PERCUSSION PROJECTILES—John Lippincott, of Pittsburgh, Pa.: I claim the combination of the cylindrical chamber, piston, spiral spring, cap and nose piece, constructed and arranged as de cribed, forming an improved percussion apparatus to be inserted into the powder chamber of bombshells, either in combination with or without a shallow sabot of lead of the shape described, the whole being constructed and arranged substantially in the manner and for the purposes set forth.

STOVES—James B. Mabury, of Jeffersonville, Ind.: I claim surrounding the fireplace of a stove of any size or form with at least two or more air jackets standing in no communication with each other, admitting no currents of heated air to circulate through them, and each of them provided with only one valve, constructed and operated as described, for the purpose of controlling the radiation of heat from the outermost shell of the stove, without interfering with the fire in the interior thereof.

MACHINE FOR FELLING TREES—Ebenezer Mathers, of Morgantown, Va.: I claim the method of straining the saw by means of the curved elastic arms, C C, and the adjustable bar, D, as above.

CONE TUBES—John McCrone, of Thompsonville, Conn.: I claim the use of the crystal as a material for the cones or trumpets used for shaping and consolidating yarn of woolen, cotton, or other materials on bobbins.

MAKING ELASTIC RUBBER CLOTH—Richard McMullin, of New Brunswick, N. J.: I claim render ng vulcanized india rubber, for the manufacture of shirred goods, adhesive, by boiling it in a solution of potash to remove the sulphur from its surface, thus fitting the sheet of rubber to receive a coat of cement, whereby it is caused to adhere firmly to the cloth or other fabric between which it is placed, in the manner and for the purposes substantially as set forth.

SEED PLANTERS—Elijah Morgan, of Morgantown, Va.: I claim in combination the dead hoppers, E E, the chamfering or beveling of the ends of the seeding bar and the scolloping of the shield, so that any grain that may be carried to the ends of the seeding bar may be forced by it into said dead hopper, substantially as described.

MACHINE FOR MAKING CLOTHES PINS—George W. Parker, of Fitzwilliam, N. H.: I claim, first, the use of holes in a wheel or of tubes secured to a wheel, and into which the pieces of wood are fed, and thus retained in and carried forward to the proper position to be acted on by the lathe saw or bit.

Second, I claim a sliding or vibrating lathe and tail block, whereby the pieces of wood to be turned are carried forward to the action of the cutters or chisels

Third, I claim the cutters or chisels in combination with the lathe and holes.

Fourth, I claim in combination with the holes a saw or bit and a sliding or vibrating carriage or holder or its equivalent, to convey the pieces from the holes of the saw or bit.

SECTIONAL FIRE-POTS—Merritt Peckham, of Utica, N. Y.: I do not claim forming a fire-pot of sections of parts irrespective of the the construction and arrangement, as shown.

But I claim forming the fire-pot of stoves, furnaces, etc. of sections, A, when said sections are constructed and secured together, substantially as shown and described.

BOXES OF RAILROAD CAR AXLES—David R. Perkinpine, of Philadelphia, Pa.: I do not claim, in connection with axle boxes, a movable reservoir with lubricating substances, or the method of constructing the box with a loose bottom.

But I claim the movable piece, B, the vertical portion of which forms the front, and the horizontal portion of the bottom of the box, in combination with the preparations, a and b, and groove, e, on the latter, for the purpose of quickly exposing the whole interior of the box for examination or cleansing, and as quickly covering the same.

MAKING CHILLED CASTINGS—Wm. Butler, of Little Falls, N. Y.; I claim the combination of the hollow chill cores, C No. 1 and C No. 2, with the sand core, B, for the purposes of obviating the difficulty of warping and springing attending the casting of cast-iron boxes on chills and thereby forming a chamber in the box, in the manner and for the purposes described.

SEWING MACHINES—I. M. Singer, of New York City: I claim the method, substantially as described of distending or gathering up the cloth or other substance, when the needle operates upon it to form the seam by combining in a sewing machine two distinct feeding wheels, or their equivalents, moving with a differential motion, substantially as described.

HARNESS BUCKLES—Nathan Post, of East Cleveland, O.: I claim attaching to a three barred buckle, first, the flanges N N N, which keep the trace or strap in the center of the buckle.

Second, the tube, O, on the center bar, made loose so as to revolve thereon, for the purposes described.

Third, the block or foundation, B, with its stationary tongue, C, made, constructed, and applied to the buckle in the manner set forth.

OMNIBUS REGISTERS—James Rodgers, of New York City: I do not claim the general plan of an omnibus registeracted on by a strap to the conductor or driver, or fitted with any other means for moving the register. Nei ther do I claim the indicating dials or hands, nor any arrangement of the same. Neither do I limit my invention to use with the peculiar arrangement of dials or other indicating parts.

But I claim the mode of locking the ratchet wheel, K, making the operating pawl, D, pass at the end of its motion, beneath or against the ratchet teeth, so as to lock the wheel in place, substantially as specified.

SAWING MARBLE IN TAPER FORM—C. A. Schultz, of Chicago, Ill.: I claim adjusting the said saw by means of the swinging pulleys acting laterally upon it, combined as described, with the pulley regulating the tension, the several parts being arranged and operating substantially as described.

PRODUCING DESIGNS ON WOOD—Philipp Schwickardt, of Brooklyn, N. Y.: I do not claim the production of raised designs, but of veins, streaks, drawings, pictures and designs on the plane surface of the woods by means of pressure, the forms or dies described, and of the application of the same for the production of veins, streaks, drawings, pictures, and designs, the exclusive use of the design produced through the body of woods, when compressed between proper forms, and the combination of two or more kinds of woods, to produce the mosaic or inlaid work, by compressing, joining and separating them as described.

BRASSES OF CONNECTING RODS—J. R. Sees, of New York City I claim the combination of the bridge piece, E, and the wedges, D D, as described, for the purpose set forth.

NAIL PLATE FEEDING MACHINE—J. P. Sherwood, of Fort Edward, N. Y.: I claim the use of the grooved cam with its friction roller and bar, in combination with the slotted or cylindrical cam, nipper handle, and female screw, constructed and arranged as described, and operating to produce the peculiar movements necessary for feeding the nail plate in nail machines, in the manner and for the purposes set forth.

HAT BODIES—A. B. Taylor, of Newark, N. J.; I claim the arrangement for hardening the hat body in a dry state, by machinery operating substantially as set forth.

I also claim the method of facilitating the removal of the bat from the perforated cone, by means of a blast of air forced through the cone.

HARNESS FOR SHOEING HORSES—W. P. Thomas, of Hillsboro', Ind.: I claim, first, the combination of the windlass, M, with the traces, e e, the tugs, t t, and tail lever, or singletree, k, these or their equivalents, by means of which the horse is brought to his place, and secured from lateral motion, substantially as set forth.

Second, I claim the combination of the windlass, L, with the ropes, o o, and the harness, b, these or their equivalents, by means of which the horse is prevented from rearing or moving backward, in substance as set forth.

Third, I claim the combination of the cords, g g, with the pulleys, m m n n, the breeching, d, and the traces, c c, such an arrangement of the parts that the breeching, d, is firmly held in its place by the weight of the horse, substantially as indicated.

Fourth, I claim the combination of the back band, f, with the pawl, L, the pulley, v, the rope, x, the breeching, d, these or equivalents, by means of which the horse is prevented from raising his hinder parts, and the breeching, d, is prevented from rising up.

Fifth, I also claim the sliding bars, 2, by which the horse is prevented from pulling his foot away, while the front shoes are being driven on, substantially as represented.

ARGAND LAMPS FOR BURNING ROSIN OIL—Isaac Von Bunschoten, of New York City: I claim, first, deflecting a portion of any passing draft, or current of air, up the exterior air tube, by means of the wings, f f, or their equivalents, to counteract the suction or partial vacuum produced at the other portion of the lamp, by said passing draft or current of air, as specified.

Second, I claim the wings, f f, or their equivalents applied around the wick tube, 3, to cause any sudden draft or current of air to be deflected with equal force up, into the cone, 2, and external draft, and down into the drip cup, c, and internal draft, in the manner and for the purposes specified.

Third, I claim the separate transparent cone, c, within the chimney, d, rising only to about the hight of the button, 7, for the purposes specified.

Fourth, I claim the sleeve or cups combined with the perforated wick tube, and inclosing said perforations, in the manner and for the purpose specified.

BORING MACHINES—I. W. Ward, of Birmingham, Pa.: —I am aware that augers have been so arranged as to be made to approach or recede from each other, and still remain in gear with the driving cylinder, but in practice, as heretofore arranged, they are too expensive and troublesome to go into general use. This I do not therefore claim.

But I claim having the cylinder, D, in the curved arcs, c, and the shaft, F, in the straight slots, b, cut in the pillar blocks, B, and uniting the journals of D and F, by the braces, F, so that they may be adjustable, but always be held in gear with each other, substantially as described.

I also claim the hollow auger shanks, F' H', so arranged as to slide over the stationary shafts, F H, as they are forced out or drawn back, substantially as described.

CIRCULAR SAW SPINDLES—Hiram Wells, of Florence, Mass.; I claim the arrangement and application of the eccentrics with respect to the shaft boxes, B B, and their stationary and adjusting screw pins, substantially in the manner and for the purpose described.

STRIPPING TOP FLATS OF CARDING MACHINES—Geo. Wellman, of Lowell, Mass. Patented in England Nov. 25, 1853, I claim first, the combination of the segmental gear, L, with its projecting rim, Q, and the pinions, O and P, with their attached notched plate wheels, all as applied to the shafts, K M N, for the purpose of giving the alternate intermittent movements to the shafts, M N, as specified.

Second, the arrangement of the mangle pins, Z' Z', &c., in the arc of a circle, upon the center of which the frame carrying the stripping apparatus vibrates, for the purpose of avoiding intermediate gearing and consequent back lash, as described.

Third, I claim the combination of the cams, X X, with the chain belt, Q', the chain pulleys, R', and shaft, M, arranged and made to operate together, as described.

Fourth, the combination of the cams, X X, with the levers, Y Y, carrying and operating the stripper card, in the manner specified.

Fifth, the combination of the cams, X X, with the lifting rods, Z Z, and the levers, Y Y, arranged and made to operate in connection, as described.

Sixth, the combination of the springs, F' F', and the pins, E' E', and their application to the frame, S, for the purpose specified.

Seventh, I claim a mechanism for cleaning the stripper card, arranged and applied substantially as described.

Eighth, I claim the segmental gear, L, and its rim, Q, as applied and operated for the purpose of giving motion both to the mechanism for raising, stripping, and depressing the top card, and to the mechanism the moving and stopping mechanism from one top card, to another, not moving both at the same time, but alternately first one and then the other.

RECIPROCATING SAWS—J. Z. A. Wagner, of Philadelphia, Pa.: I claim, first, having the saws, H H, within the saw sash or gate, E, on or to nuts, c c, which work or are fitted on right and left screw rods, I, substantially as shown and for the purpose specified.

Second, I claim operating or adjusting the saws, H H, laterally in the saw sash, or gate, E, by means of the pinion, K, placed loosely on the shaft, J, so that said shaft may work freely through it, the shaft, J, having bevel pinions, e e, at its ends, which pinions gear into corresponding pinions, d', at the outer ends of two of the screw rods, as described.

Third, I claim connecting and disconnecting the screw rods, I, by means of the levers, O O P, and arm, Q, arranged, substantially as shown and described, for the purpose specified.

SPINNING WHEELS—Lyman Wright, of Benton, Pa.: I claim attaching the spindle of a band spinning wheel to a vibrating pendulum, and operating the same substantially in the manner and for the purpose set forth.

TUNNELING ROCKS—Charles Wilson, of Springfield, Mass.; I claim, first, the circular formed as a short hollow truncated cone for acting on stone or other material, substantially as and for the purposes specified.

Second, I claim a continuously revolving wheel, provided with circular rolling discs, or cutters, the axis of which cutters stand alternately in opposite directions, or nearly at an angle of 45 degrees, with the shaft of said cutter wheel, thereby acting to excavate the rock or other material, substantially as specified.

Third, I claim the arrangement of the alternating inclined tapering planes, o o, and stocks, p, for the purpose of sustaining and adjusting the alternate rolling cutters, as specified.

Fourth, I claim the construction of the shaft's cylinder, q, and parts attached, when used in connection with the socket, 29, set screw, 30, and binding strap, 31, for the purpose and as specified.

Fifth, I claim the general arrangement of the cylinder and shafts, d f g h i i l and k k, and gearing attached for rotating the drum, C, and pressing the same forward in the manner and substantially as specified.

SAFETY APPARATUS TO HARNESS AND THILLS—Jos. H. Wilson, Jr., of Nashville, Tenn.: I claim attaching the horse directly to the shafts, C, of one horse vehicles, by means of the boxes, A A, which are secured to the harness, as shown, a box at each side of the horse, the boxes being constructed as shown, with the two hinged or jointed sides, so that they may be opened, when necessary, by the driver, for the purpose specified.

CUT-OFF GEAR FOR STEAM ENGINES—Orville Leonard, of Sommerville, Mass. (assignor to himself and G. K Reynolds, of Medford Co., Mass.): I claim the rocker, d the toe, g, and the bar, G, constructed and arranged as described, and operating substantially as set forth.

RE-ISSUES.

R. R. CARS—B. J. La Mothe, of New York City. Issued originally April 4, 1854: I claim the construction of the frames of railroad cars, substantially in the manner and for the purposes specified.

NUTS, WASHERS, &c.—Wm. Kenyon, of Steubenville, O. (assignor to Haigh Hartupee & Morrow.) Patented originally Oct. 4, 1851: I claim, first, the use of the die, T, and die box, M, for severing the blank, the close die box in combination with the dies and bracket, Q, for pressing, and the punch, L, for perforating the same during the pressure, the whole operating conjointly as described, for making nuts or washers at one operation.

Second, the manner substantially as described, of so arranging the dies, in relation to the punch, that any excess of iron in the blank shall be forced into the path of the punch, thus securing the compression of the nuts without risking the breaking of the machine.

FORMING WEBS WITHOUT WEAVING OR SPINNING—Union Manufacturing Co., of Norwrlk, Ct. (assignees of the legal representatives of John Arnold, deceased.) Patented originally July 15, 1829; extended by Congress 14 years from March 23, 1854: I do not claim the carding machines or any parts thereof in common use.

But I claim the combined use of them as described, for the purpose of crossing the fillers of the material of which cloth may be made, in the manner and on the principle described, and the new machinery necessary to effect that object, particularly the comb carrier, the means described for severing the weft or web, and the fallers for placing the weft upon the warp, operated substantially as described.

I also claim the depositing of the weft in separate sheets, edge to edge, upon the continuous sheet of warp, substantially in the manner and for the purpose described.

ADDITIONAL IMPROVEMENT.

MASH MACHINES—Adolph Hammer, of Philadelphia, Pa. Patent dated Jan. 9, 1855: I claim the construction, application, and use of the inclined curved teeth, A and B, substantially and for the purpose as set forth and escribed.

GAS BURNERS—C. H, Johnson, of Boston, Mass. Patent dated June 26, 1855: I claim extending up into the gas, distributor and purifier, and among the wires of the latter, as specified, a cone having at its apex, the inlet opening for the passage of gas into the purifier, the same serving to attain advantages, as explained.

DESIGNS.

ELEVATED OVEN STOVES—S. W. Gibbs, (assignor to W. & J. Treadwell, Perry & Norton,) of Albany, N.Y.

New York Railroads.

The Annual Report of the Railroad Commissioners—J. T. Clark, Wm. J. McAlpine, and James B. Swain—of New York, for the year 1855, has just been published. The object of this Board of Commissioners is to exercise a supervisory control over all the railroads in the State. No new railroad can be opened to the public without an examination, by the Board, and a certificate from it authorizing its opening. That part of the Utica and Black River Railroad from Trenton to Boonville was to be opened for public use on the 5th of December last, but after an examination the Commissioners forbid its opening until certain defects in it were remedied, after which the Board granted a qualified certificate, restraining the speed of the cars to ten miles an hour over certain portions of it.

It seems that some of our railroads are managed in a very disreputable manner. The report states that some companies instead of promptly furnishing correct reports of their condition and affairs, exhibited great unwillingness to do so; and some companies furnished careless and deceptive statements. The books of some companies are kept in such an imperfect manner that it is difficult to obtain important information. Nearly all the reports furnished contained errors. This is really degrading to the character of our railroad companies.

There are two great railroad corporations in New York, "the New York Central," and the "New York and Erie." The former has over 862 miles of track, including side tracks and branches, costing over $24,000,000. It has 188 locomotives in use; the express trains run at the rate of 35 miles per hour, and passengers are carried for 2 cents per mile. The New York and Erie has 729 miles of track, including branches and double tracks. It has 203 locomotives. The total cost of equipment, &c., was $33,742,317. These two railroads overshadow all the others.

A condensed compendium of the accidents, experiments made on the different roads, and the examinations had, has yet to be prepared.

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Natural Right of Man to his Invention.

[The following able article on the natural right of an inventor to his invention is from the pen of Commissioner Mason, and we recommend it to the careful perusal of all who are interested in patents and patent property. It is no more than simple justice to state that Judge Mason has done more to elevate the character of patent property and to maintain the rights of inventors than any previous Commissioner; and although his views are antagonistic to those entertained by us upon this subject, yet we can vouch for his candor in this expression of his opinions.

In next week's paper we shall take occasion to elaborate on this interesting subject, and shall sustain our views by the highest known authorities who have made it a subject of careful consideration.]

I have to thank you for the complimentary terms in which I find my late report noticed therein in recent numbers of the SCIENTIFIC AMERICAN.

But while I do this in all sincerity I feel constrained to reply to some remarks contained in your number for last week. I do this not for the purpose of engaging in a controversy on the subject, nor for any reasons personal to myself, but merely because I think your views erroneous, and error in the conductors of a public press is doubly dangerous.

You seem to suppose that the inventor has not the same natural right to that which he has brought into active usefulness as though he had created or constructed a tangible article. I am wholly unable to appreciate the force of the reasoning in support of that proposition. If a person creates or renders useful that which but for him would have been valueless, does it make any substantial difference whether he does this with his head, his hands, or his feet? The *result* is all that is material.

But I shall be told that the Indian who builds a wigwam in the forest, has no right to prevent others from imitating it. Probably this is true, for *giving a particular shape to a wigwam* would not be a patentable invention under our law.

But suppose the Indians to be altogether destitute of wigwams, and suppose some one wiser or more fortunate than the rest should create or discover a lamp like that of Aladdin by the rubbing of which, old useless materials could be at once converted into comfortable habitations, would not the possessor of that lamp be fairly entitled to the entire use and benefit of it?

Now, every real inventor has possessed himself of something of the very nature of sueh a lamp, which is but the type of knowledge—the true practical Aladdin's lamp. The inventor is able to do with a given amount of means what cannot be done by others. This *knowledge* is the subject matter of his patent. If he has not a natural right to the benefits of it, I can conceive of no such thing as a natural right to property of any description. He has possessed himself of something he himself has created. In doing so he has not diminished in the least whatever would have been otherwise possessed by the world. This is something superadded to what before existed and superadded by himself. Besides, he has undoubted power and right to conceal his discovery from all the world. No one has a right to compel him to reveal what he has invented. If he does make such a revelation, may he not rightfully prescribe some terms on which this shall be done? If so, has he not a "natural right" to the benefit of his invention?

Suppose I could cause an island to rise up in the midst of the Atlantic. Suppose I had the further power to cause it to disappear at pleasure. Would any one contend that I had not a "natural right" to that island? If I finally made it permanent and gave it to the world, ought I not to prescribe the terms on which this should be done? Every inventor has created an island which he may cause to disappear forever. Has he no natural right to it?

To say that he has not, single-handed, the means of enforcing that right, argues nothing against its existence. What could the owner of ten thousand acres of land do by himself towards enforcing his rights? It is the very object of governments to protect each other in the enjoyment of rights which would otherwise be snatched from us by the hand of rapacity.

Mr. Scott, in an opinion quoted with approbation by you, says that a patent does not give a right of *possession*, but a right of *exclusion*. And pray, what is the difference? Are they not in this relation controvertible terms? Does not my right to *possess* infer the right to *exclude* others from the possession? Is a patent for an *invention* any more a monopoly during its life-time than a patent for *lands*?

After all, do not those who reason against the rights of the inventor lose sight of the real point in the case. The bird that builds a nest on the branch of a tree has a right to that nest, but cannot justly prevent other birds from doing the same thing. And why? Because all that it has done is to follow its instincts to construct a nest. It has invented nothing. But suppose birds had always built their nests flat on the ground, and suppose, in a general convocation of all the birds, some one should proclaim "I have possessed myself of a power which I can impart to others, by which you can all be enabled to suspend your nests on the slender branches of the tall trees entirely beyond the reach of your most numerous and most formidable enemies," would not the whole feathered congress at once by acclamation enact a law that *as an act of justice* each one availing himself of that power for the period of fourteen years would pay to the public benefactor a reasonable compensation?

But I shall be told the right of the patentee is wholly *legal*, and not *natural*. Let us bring this question to the test. Here are two men one of whom has made an inventon, the other has not. Both claim a patent. The public interest will be as well subserved by granting it to the one as the other. If the inventor has no *natural right* it is wholly immaterial as a matter of equity to which of these men a patent is granted. But would not any one of correct moral preceptions cry out against the injustice of such a proposition? Why? Because the inventor has a *natural right* to that which he has created.

One word in relation to the perpetuity of patents. I did not say that an inventor had a natural right to a protection of infinite duration, but that the *strongest argument against the granting of a perpetual patent grew out of expediency.* I am still of that opinion. There are other valid arguments against the granting of such patents, but I had not time and space to state them in my Report; I merely stated what I deemed the strongest, and one that was sufficient.

The rights of property of every description are to be held in subserviency to the public welfare. If the State is to be called upon to exert its whole power to protect private rights it has clearly the privilege of demanding something in return. Every individual can rightfully be called upon to surrender a portion of his natural rights for the sake of securing the remainder.

Thus, when I purchase lands of the United States my title is complete—my right perfect. But still, the State may require me to pay taxes for the same, and in default thereof may sell it to another. It may say to me "the public interest requires that you should not entail this property upon any particular class of heirs—that it should not be limited by will beyond a prescribed period," and in various other respects it may make my natural rights subject to the public welfare. The same rules apply to the property in inventions, and in this way it is perfectly legitimate and proper that natural rights should be modified. A protection for fourteen years is better than an unprotected perpetuity.

I have written much more than I intended, and had I more time I could have condensed all I have said into much smaller space, but this I cannot do at present.

Yours very truly

CHARLES MASON.

Washington, March 11th, 1856.

Now is the time for trimming vines in the Northern States.

Daguerreotype Pictures for the Stereoscope

The accompanying figures illustrate a method of taking photographic pictures for the stereoscope, whereby the two pictures may be taken simultaneously. This method is the invention of F. A. P. Barnard, Professor of Chemistry in the Alabama University. The description of it is taken from *Silliman's Journal*, and re-published by us at the request of some photographic artists (in order that it may have the benefit of the extensive circulation of the SCIENTIFIC AMERICAN,) as an important matter intimately connected with the progress of their art, and not so generally known as it should be.

This method has the advantage of requiring no modification of the construction of the camera; and also the additional one of producing both pictures, if desired, upon one plate, but this result cannot be secured with a camera having two object-glasses, (without at least a very inconvenient arrangement of mirrors,) because. of the two pictures produced in such a camera upon one plate, the right hand one will be that which should belong to the left eye, and vice versa.

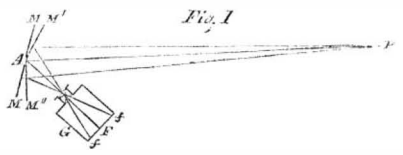

Fig. 1 is a plan of the arrangement employed. G is the camera; P a central point in an object to be copied, and A M, A M, two small vertical plane mirrors, movable on a common vertical hinge at A. These mirrors are at first brought truly to the same plane, so that they give but one image of the object on the ground glass screen of the camera, at F. The camera is then adjusted so that, the image of P being single, the optical axis, F A, may be directed truly toward the hinge, A, and the image be formed truly in the middle of the screen, at F. Now supposing that it is desired to produce two pictures distant from each other (measuring from center to center) by a space=n, the two mirrors must be carefully moved on the hinge, A, to the positions, A M', and A M", so that the images of P, reflected by them, shall pass from F to f, and from F to f, each of these distances being 1-2n.

In order that the points of views under which these images will present P, may be so far different as to correspond to those of the two eyes in natural vision, the camera must be placed at a certain determinate distance from the mirrors. This will be easily ascertained without calculation by a person familiar with this process; but it may be found mathematically as follows:

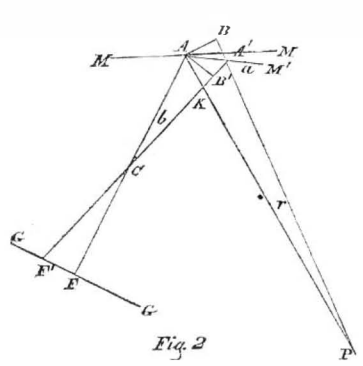

Fig. 2

Let A M, A M, fig. 2, be the two mirrors, and A the hinge. Then the camera being supposed to be properly adjusted, A F, will be the line of its axis, and also the direction of the ray P A, after reflection, while the mirrors continue in one plane. Let A M', be the position of one of the mirrors after its displacement. Then if C be the virtual center of the arrangement of lenses, the image of P will be formed at F', instead of at F, by means of the ray, P A', reflected through C to F'. G G, the glass screen, will of course be perpendicular to the axis, A F.

Draw A B perpendicular to A P, and A B' perpendicular to A F. Put the angular change of position of the mirror, M' (=angle MAM') =a, the angle ACA'=b, and the angle APA' =r. Then in the triangle PAB, right angled at A, angle B=90°—r. It is easily seen that BAM=the original angle of incidence of PA. Represent this angle by I. Then

$$\text{BAM}+\text{MAA}=\text{BAA}'=\text{I}+a$$

Also, as above, $\text{ABA}'=90°-r$

Whence, in the triangle BAA, the third angle, $\text{BA}'\text{A}=90°-\text{I}-a+r$.

Now, to obtain AA' in terms of A B,

$$\sin \text{BA A} : \sin \text{ABA}' :: \text{AB} : \text{AA}',$$

Or, putting AB=a

$$\sin (90°-\text{I}-a+r) : \sin (90°-r) :: a : \frac{a \cos r}{\cos (\text{I}+a-r.)}$$

Again, in the triangle B'AA'

$$\text{Angle AB}'\text{A}',=90°+b.$$

And, $\text{AA}'\text{B}' (=\text{AA}'\text{B})=90°-\text{I}-a+r.$

Whence $\sin \text{AB A}' : \sin \text{AA}'\text{B}' :: \text{AA}' : \text{AB}'$,

Or $\sin (90°+b) : \sin (90°-\text{I}-a+r) : \frac{a \cos r}{\cos (\text{I}+a-r)} : \text{AB}'$

And $\text{AB}'=\frac{a \cos r \cos (\text{I}+a-r)}{\cos b \cos (\text{I}+a-r)}=\frac{a \cos r}{\cos b}$

Now AB' is parallel to GG: hence,

$$\text{FF}' : \text{AB}' :: \text{FC} : \text{CA},$$

which last term is the distance (measured from the virtual center of the objective) at which the camera must be placed from the point, A.

In this proportion, F F', is arbitrarily fixed, and will be from 1 to 1 1-4 inches, FC is the focal distance of the camera, when the image of P is distinct on the screen, and A B' is determinable by the foregoing formula.

In that formula, a is one half the distance between the eyes (1 1-4 inches on an average,) b is directly determinable in the right angled triangle CFF', and r is in like manner to be obtained from the right angled triangle PAB, the distance, AP, of the object from A, being ascertained by measurement.

The mirrors ought to be such as are prepared for photographic purposes;—that is to say, they should be of the best glass, and have their surfaces perfectly parallel, or else they should be of metal.

In Prof. Barnard's letter to Prof. Dana, on the subject, he says, "The photographs prepared in this way are not surpassed by any others I have tried. I am accustomed to adjust them on the plate at a distance from each other somewhat less than that of the eyes (say between two, and two and a quarter inches from center to center.) I employ no optical artifice to superpose them (such as interposed prisms, or lenses eccentric to the eyes); but looking through the centers of the lenses, the superposition takes place naturally and easily. If the pictures are rather large, they must be more widely separated, and some optical expedient must be employed to produce deflection and aid the eye.

In every daguerreotype for the stereoscope which I have seen (as purchased from the opticians) the relief is grossly exaggerated. You will not find such the case with this. The error of the manufacturers has been to make the points of view—in taking the photographs—too widely different."

To Inventors.

MESSRS EDITORS—Will you allow me to request you to suggest, through your paper, that a small card and bill-head press, which can be afforded at a price not over $30, is greatly needed, and if invented would be worth a great deal. In country printing offices, such a press would be appreciated. A card press cannot be had for less than $135—which is a ridiculous price; and it is strange if a small, neat, compact machine, to be worked by a treddle, cannot be got up for less. The press should be capable of printing a form at least as large as a half letter sheet. E. M. D.

Pennsylvania Polytechnic College.

We understand that this young institution has met with great success since it was established about two years ago. It is strictly a college for teaching the practical sciences—mathematics, chemistry, engineering, mining, agriculture, &c. Each of the departments is under the charge of a separate professor. It is the only institution of the kind in our country, and deserves an extensive patronage. It is located in the city of Philadelphia; Prof. A. L. Kennedy is President of the Faculty.

The steamboat *Belle* exploded her boilers recently while running on the Sacramento river. Most explosions have taken place at starting the engine; this was the case with the *Belle*.

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New Inventions.

Henry Cort, the Inventor of Grooved Rollers and the Puddling of Iron.

On page 110, this volume SCIENTIFIC AMERICAN, we pointed out the benefits which had been conferred on England, and the whole world, by the inventor whose name stands at the head of this article; and we also pointed out the gross injustice which had been done to him, in depriving him of the benefits of his patent, by a violation of the compact on the part of the British Government, embraced in the law of patents. Since that time, David Mushet, Esq., a practical and scientific manufacturer of iron, and an able writer, has devoted much time, and has interested himself greatly in collecting information, and advocating the duty of government, and English iron manufacturers, regarding giving compensation to the heirs of "Cort," for the wrong done to their father.

We have lately received a pamphlet from Mr. Mushet on the subject, and a letter, through John Avery, Esq., from Richard Cort, the son of the inventor, thanking us for our spontaneous advocacy of his father's legal rights. We quote the following from his letter:—

"I should be an unworthy representative of my late father, if I did not avail myself of the first opportunity, through your kindness, of conveying to the Editor of the SCIENTIFIC AMERICAN, published in New York, some expression of the gratification which I derived in reading the article headed 'Gratitude to Inventors of Iron Manufactures;' and I feel grateful for the generous, able, and honorable testimony borne to the merits of one, who the Editor is pleased to raise to the high but no less deserved distinction of being the creditor of all nations of the earth, using or making puddled and rolled iron."

Mr. Mushet's pamphlet is an able exposition of the wrongs done to H. Cort, and an able argument in favor of the claims of his heirs. The London *Mining Journal* says of it, "It will be a matter of general congratulation that the cause of R. Cort is likely to prosper. The powerful appeal published in our journal, and the able advocacy of David Mushet, and others, seems likely to kindle a spark in the iron districts that will not be easily extinguished, but like the flames in the puddling furnace, which produced all the elements of prodigious wealth, coupled with grooved rollers, for the iron masters of Great Britain, will now begin at the end of more than half a century to do something for the four surviving descendants of their greatest benefactor—the late Henry Cort."

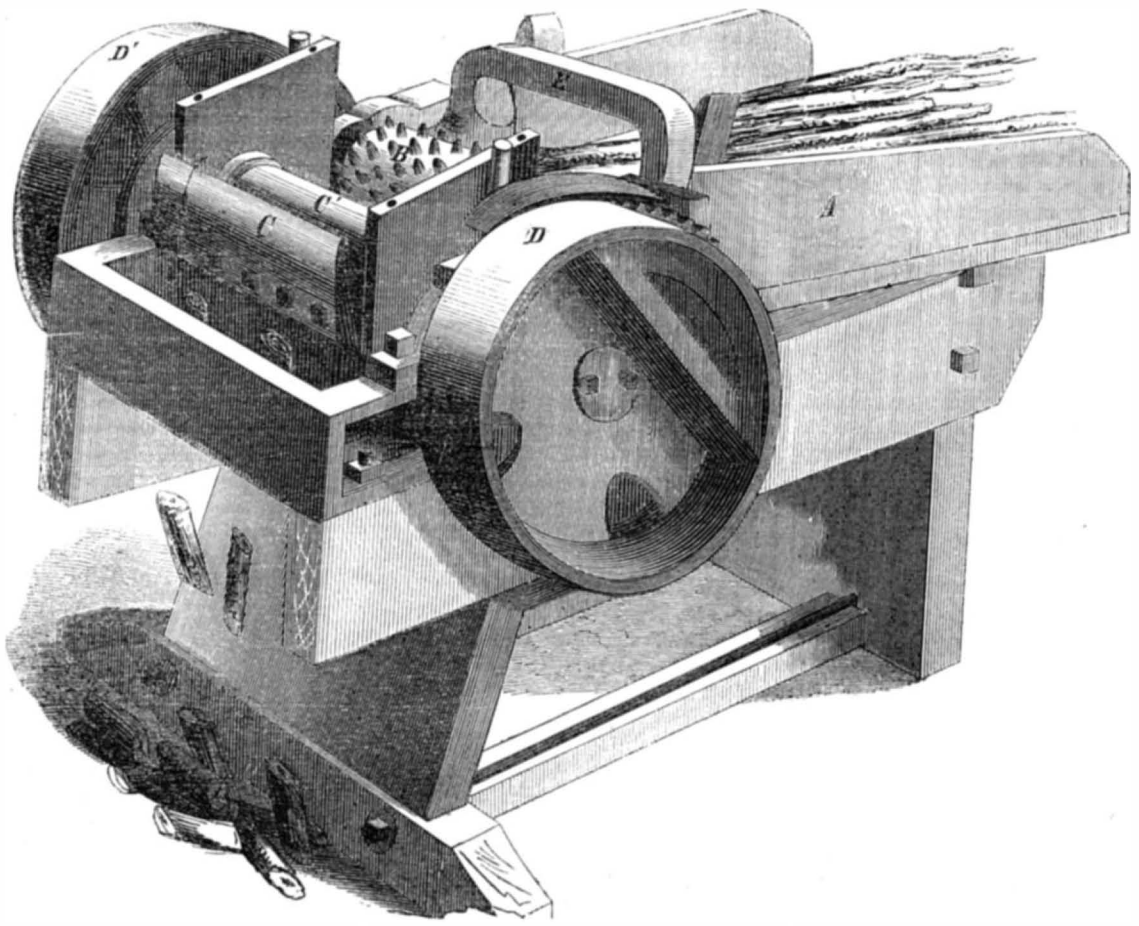
Mr. Roebuck is soon to bring the case before Parliament, and he will doubtless do it justice in spite of expected opposition of many engaged in the iron interests. We sincerely hope that Parliament will do justice to the heirs of Henry Cort, because there can be no doubt of the wrong done to their father during his life time, by the British Government, in wrongfully depriving him of the benefits of his patent, by laying an injunction upon it, because he happened to be in partnership with a person who became a defaulter to the government.

Steam Fire Engines.

The Cincinnati *Commercial* contains the report of a Committee of Engineers appointed by the City Council to enquire into the relative merits of the two kinds of steam engines made in that city—*Lattas* and *Shawks*—and also to enquire into the cause of the explosion of the *Joe Ross* fire engine. The conclusion of their investigation regarding the explosion is, that it was caused by the fire-box not being properly stayed.

The report is favorable to *Shawk's* boiler, which is held to be superior, and is of peculiar construction. The sides of the fire are surrounded by a continuous series of pipes, arranged so as to form a square casing about it, which, after being built up to a sufficient hight are then returned backward and forward over the fire, and piled in successive layers until a sufficient length is attained—the pipes gradually increasing in caliber as the total length increases. The water is injected into the lower end of the coil, and takes up the heat from the pipes until it is converted into steam, and is delivered into a strong cylinder being compelled to pass through water contained therein. This steam chamber communicates, by means of a pipe from its upper end, with another and larger cylinder, which forms part of the frame-work or foundation of the pumping apparatus.

MACHINE FOR CUTTING FUEL.



Fuel Cutter.

Our engraving illustrates an invention for cutting up the smaller sticks of wood into short lengths, for fuel, being especially adapted for renducing kindling wood, such as is used in coal stoves of large towns and cities.

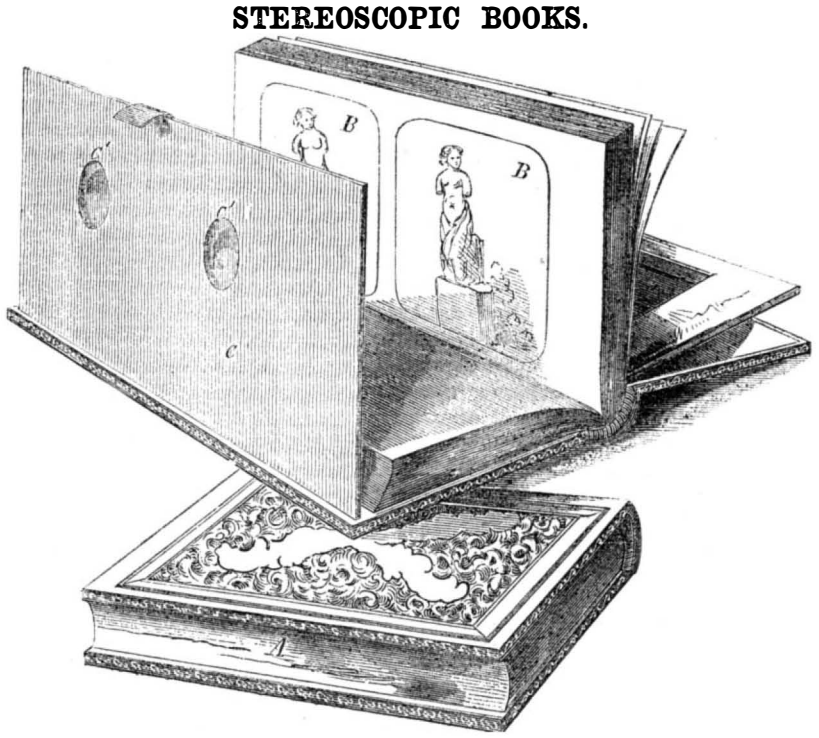
The machine possesses many of the characteristics of a hay or corn-stalk cutting machine, only it is constructed in a much stronger and more massive manner. The sticks are placed in the cutting box, A, and fed in by the feed roller, B, which is armed with strong teeth, as seen. This roller drags the sticks along, when their ends are rapidly clipped off by the knife, C, and drop down, in small pieces, at one end of the machine. Knife C is bolted to shaft, C', and revolves with it. D D' are fly-wheel pulleys, weighted on one side, so as to gather the momentum necessary to carry the knife through the wood.

This machine cuts up the toughest hickory wood into small lengths, with a rapidity that is surprising. It is made, throughout, with great strength, and operates with unusual effectiveness. Gearing is employed to move the cutting shaft, and to prevent accidents, the knife is boxed in; but in the engraving; the box is removed in order to show the cutter more clearly. E is a strengthening brace.

Large quantities of kindling wood are required in every city.

The inventors of this improvement are Daniels & Raymond, Woodstock, Vt. Further information can be had on application to Webster & Co., Empire Kindling-Wood Co., foot of 25th street, East River, New York.

STEREOSCOPIC BOOKS.



Mascher's Stereoscopic Books.

Among the many improvements in the art of taking pictures by means of the action of light, one of the most interesting results is the Stereoscope. This consists of two representations of an object, taken at slightly different angles. In producing a stereoscope portrait, for example, two daguerreotypes are made, exactly alike in dimensions and all other respects, except that when one portrait is a view taken directly in front of the sitter, the other portrait must be taken at one side. If, now, the two portraits are placed side by side and looked at through a pair of magnifying spectacles or lenses, they will *seem* to have combined and formed *a statue*, cut by the unerring hand of Nature, standing out in bold relief, vivid, and absolutely perfect.

Those who have never seen a Stereoscope would be surprised at the extraordinary magical result produced by the lenses. The effect is the same whether the representation be portraiture or landscape. The stereoscopic view of a city shows not a mere drawing; the *real city itself* seems presented to the sight. So, too, with the portrait: the flat outline disappears, and the *living subject* seems to stand before the eye.

The common stereoscopes are spy-glass-looking instruments, and withal rather large and inconvenient. They were greatly improved upon by Mr. John F. Mascher, of Philadelphia, Pa., who, in 1853, patented the idea of placing a fly leaf or flap in the common daguerreotype miniature case, the flap being furnished with a pair of lenses. In this manner the stereoscope was reduced so as to occupy but little additional space.

Since Mr. Mascher's patent was granted the art of taking pictures upon paper and other substances has been much cheapened and simplified; a process has also been practicalized whereby any number of duplicate copies may be printed from a photograph. The inventor takes advantage of these circumstances for the production of *Stereoscopic Books*, or volumes in which the views and illustrations are presented stereoscopically.

Our engraving shows a couple of these books, which, outwardly, are like any other volumes. In the open book seen in the cut, B are the photograph pictures, C the lense flap or leaf, and C' C' the lenses. The lense leaf, C, folds in when the book is closed, like any fly leaf, and the volume presents the appear ance shown at A. One lense leaf, it will of course be understood, serves for the examination of all the photographs.

We cannot conceive of any single acquisition to a library or a parlor table of more interest and value than a book filled with these stereoscopic pictures. The range of subjects capable of being embraced is inexhaustible. Family portraits, views of favorite localities, towns, cities, objects of art., &c., may be thus preserved in a permanent and useful form.

Further information respecting this excellent invention can be had by addressing the inventor, J. F. Mascher, No. 408 Second street, Philadelphia, Pa. His patent bears date Feb. 19, 1856.

The Chinese scour silk with a thin paste made of bean flour and water.

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Scientific American.

NEW-YORK, MARCH 29, 1856.

Five Reasons against the Extension of the Woodworth Patent.—Letter from Constituents to a Member of Congress.

To THE HON. GUY R. PELTON, M. C.,
Washington, D. C.

SIR :—

We address you as the Congressional Representative of the District in which we reside, relative to a Memorial now before Congress from the heirs of William Woodworth, asking for a third extension of the Woodworth Planing Machine Patent.

We earnestly request that you will use your influence and vote against the said extension, because,

1st. The Patent has already had three separate periods of existence, and Woodworth and his heirs have therefore three times sold the grant. It was originally issued for fourteen years; it was then extended by the Commissioner of Patents for seven years; it was again extended by act of Congress for seven years longer.

2nd. The patent is a most odious monopoly. It has brought in to its holders, for a long time past, an enormous PROFIT of *millions of dollars* annually. It fixes a direct and heavy tax upon nearly all the machine-dressed lumber produced in the country. It imposes heavy burdens upon all the people, the poor as well as the rich, by compelling them to pay much higher prices for the lumber with which to build and repair their ships, shops, and dwellings, than would otherwise be required.

3rd. The patent operates injuriously upon inventors, and upon the whole country. It is alleged that no machine for planing boards, shingles, moldings, or wood-work of any kind, *can be used* without infringing the Woodworth Patent. Many ingenious and effective machines, improvements on Woodworth's, have been invented, but prevented from being put in operation by injunction. Slay the great Hydra, and the whole land will teem with busy planing machines, of every form and variety, giving employment to thousands upon thousands of people, and stimulating the great lumber interests of the country to an astonishing degree.

4th. The application now before Congress is the renewal of a memorial which has already been *twice refused* by that body. All the reasons which prevented Congress from granting the Monopoly, on those occasions, apply with ten-fold cogency at the present time.

5th. Public sentiment, in every part of the Union, is almost unanimous against the extension of this patent. Several of the States have, through their Legislatures, passed resolves calling upon Members of Congress to reject the application. "Numerous public bodies, and tens of thousands of citizens," have sent in remonstrances against the grant. The patent ceases in December, 1856, by its own limitations, and the earnest wish of the whole nation is, *that it be suffered to expire*.

Sir, we could write many more pages of reasons why the memorial herein referred to should be denied, but we refrain, lest we should weary your attention. The Report of Mr. Cartter, (Doc. No. 156, 32nd Congress, First Session, House, July 17, 1852,) contains a full and lucid exposition of the whole subject. To that Report, and to the long rolls of petitions in remonstrance, now before Congress—in the hands of the Committee on Patents—you are respectfully referred.

We are, Sir, respectfully,
Your obd't serv's and constituents,
O. D. MUNN,
S. H. WALES,
A. E. BEACH.

NEW YORK, March 26th, 1856.

The above is a copy of a letter which we have lately sent to our Representative in Congress, and we publish it in order to encourage others to do the same. We find that private letters from constituents to their Representatives in Congress are likely to have ten times more power, towards effecting an object, than the most strenuous or numerously signed petition. "Any body," say the M. C.'s, "can get up petitions;" and when the latter are received they are liable to be unceremoniously chucked away in a corner, out of sight and mind.

With private letters this is not the case, so we are told. We therefore call upon all persons who desire to prevent the extension of the Woodworth Patent, to take up the new cue, and *write a private letter* upon the subject, to the Member of Congress representing the District in which they reside. The facts contained in the foregoing letter, might be embodied, or the letter itself copied; or, any other statement of facts that happened to occur to the writer.

It is impossible for members to vote knowingly upon a subject unless they are acquainted with the views and wishes of their electors. In all matters that concern the constituent, he is not only privileged, but it is a duty to address his Representative in Congress, and point out the direction in which he desires to have his vote cast.

The Monopolists are playing a strong game at Washington. They are straining every nerve to obtain the extension, and if we, who are opposed to the grant, relax any of our efforts, the enemy will triumph.

Farmers, Mechanics, Inventors, Manufacturers,—Everybody! *Write to your Representatives in Congress.* Ask them, in the name of justice and humanity, to put a stop to the Great Outrage. *Write!* It will take but a few minutes of time. All letters to Members of Congress go *free of postage.* Write promptly. "Delays are dangerous."

Louisiana Right Side Up.

We take pleasure in presenting the following letter from the Hon. C. W. Fuller, conveying the gratifying intelligence that both branches of the Louisiana State Legislature have passed, by a *unanimous vote*, resolutions against the extension of the Woodworth Patent. Mr. Fuller is entitled to the thanks of the nation for his vigorous efforts in the matter. His labors have been crowned with the highest success.

BATON ROUGE, LA.,
House of Representatives, March 1, 1856.

MESSRS MUNN & Co.—*Gents.:* I have the pleasure to inform you that a resolution, instructing our Senators and Representatives in Congress to oppose the re-extension of the Woodworth Patent, for improvements in planing machinery, or any other patent that has already had the benefits of *one extension* under the Patent Laws has passed both branches of our Legislature.

The resolution was referred to the Committee on Federal Relations, who reported favorably without delay; it was taken up, the rules suspended, and it was *unanimously passed.* It has this morning passed the Senate. As soon as it has the Governor's signature I will procure and send you a copy.

Respectfully yours,
C. W. FULLER.

Three States,—Ohio, New York, and Louisiana, have already spoken boldly out, and signified, in unmistakable terms, their utter repugnance to the further extension of the Woodworth Patent. We trust that other States will follow their example. In no instance, as yet, has there been anything like opposition to the passage of the remonstrating resolutions; on the contrary, they have passed with an eclat and unanimity that is seldom witnessed in Legislative halls.

This striking fact will, we trust, stimulate and encourage the members of other State Governments to take up the subject and present it to their brother members for discussion. Any such efforts will, we are confident, be cordially appreciated, while resolutions similar to that above mentioned, will pass with overwhelming majorities. The opponents of the Woodworth Monopoly, who have friends in Legislatures, should write and call their attention to the matter at once. Private advices from Washington assure us that Legislative Resolves of this kind are like bombshells falling in the camp of the enemy. They produce a prodigious effect. Congress will not dare to extend the grant if a few more of the States say NO.

Gold and its Uses.—No. 3.

CHEMISTRY OF GOLD—The method of smelting and refining gold, as pursued in the United States Assay Office, in this city, is described and illustrated on pages 81 and 84, this volume SCIENTIFIC AMERICAN, and does not required to be further alluded to. That process, however, has only reference to gold of considerable purity, such as that obtained from California, and is not economically applicable to the refining of sweepings and scrap jewelry.

REFINING JEWELLERS' SWEEPS—In all jewelry establishments and gold pen manufactories, a great deal of gold finds its way into the floor sweepings and the washings. In the washings especially, where the polishing of gold articles is accomplished by "Water of Ayr stones," and "rouge," the gold dust is so minutely subdivided and mixed with the dirt, that it cannot be separated by washing, because it would float away with the dirt. It has therefore to be treated by a different process than washing and amalgamation with quicksilver, as it is not profitable to use the mercury process, when gold is very thinly intermixed with a great quantity of extraneous matters.

Jewellers' scraps and dust, also, contain a considerable quantity of gold and silver mixed with copper. To recover the gold and silver in such sweeps, in which there is such a small quantity of the noble metal in proportion to the amount of dirt, has been a desideratum with our jewellers. All the sweepings of the jewellers' shops, and gold pen factories in this city, used to be sold to a well known firm, which sent them to Paris to be refined, and we understand that much of such sweepings are still sent there. Many efforts, however, have been made to improve our old process of sweeps refining, and a patent was granted to Levi B. Darling, of Providence, R. I., on the 28th of March, 1855, for this purpose, embracing a new and valuable improvement. The principal feature of the process is to oxydize the base metals in the sweepings by niter and heat, but not using the salt as a flux, as had been done by others. The oxydes first formed are then washed away, and the gold and silver completely separated by the use of sulphuric acid, which converts the base metals into sulphates, leaving the genuine metals in a state of powder at the bottom of the vessels in which the matters are treated. The claim of this patent will be found on page 238, Vol. 10, SCIENTIFIC AMERICAN.

The common method of cupellation for scraps containing copper, is to mix the scraps with lead or litharge and niter, as a flux, and submit them to a high heat in a cupel in a proper furnace. The object of this process is to change the copper into an oxyd, where it will float in the cupel and pass off as scoria. This process requires great care and practice in order to conduct it properly. The silver cannot be separated from gold by cupellation; but after all the copper, lead, and impurities are separated from scrap gold and silver, these two metals can be separated with nitric acid. This acid will take up the silver and hold it in solution, but the gold will fall to the bottom of the vessel in the form of a brown powder.

Since the discovery of gold in California, it appears to us, from common observation (for we have not been able to obtain any statistics) that the use of gold jewelry, and plate has multiplied a hundred-fold among our people. The uses of gold have wonderfully increased recently, and it will no doubt yet become far more extended in use as its quantity increases. It is of so durable a nature, not being subject to oxydation in the atmosphere, like iron and copper, that it maintains its brilliancy untarnished in all climates. Were it cheap enough, it would make the most durable and beautiful material in the world for covering cupolas and for roofing buildings. It is said that some of the olden temples in the East were covered with gold tiles, but we doubt the truth of this statement; we, at least, cannot afford thus to employ such a costly material, though we really wish it were as cheap as tin, simply because of its superior qualities for a thousand purposes, for which common metals as now used.

Propositions for Testing Engines and Boilers.

Mr. Joseph E. Holmes, now of Newark, O., who was Superintendent of Machinery in the New York Crystal Palace, has issued a circular addressed to all mechanics, manufacturers, and others who are in any way interested in steam engines and boilers. Encouraged by the advice of a number of scientific and mechanical men, in different sections of our country, he proposes to institute a series of experiments to test the capacity and safety of the various kinds of steam engines and boilers now and heretofore manufactured in our country; and to publish the statistics of these trials in a compact volume, for study and reference. The work is to contain a large number of wood engravings, illustrating engines, boilers, and their modes of setting, gauges, indicators, dynamometers, &c. The work is intended to be a practical one in every sense of the term.

He proposes taking a large number of modern varieties of stationary engines and boilers, so selected as to get a fair representation of the best, the medium, and the worst, and give each a forty-eight hours' trial, noting exactly the quality and amount of fuel used, the amount of water evaporated, the pressure of the steam in the boiler and cylinder, measuring them by the most accurate instruments used for the purpose. A full and minute description of the engines, boilers, and experiments will be given. Such a work will be exceedingly useful and valuable. He appeals to the mechanics, artisans, manufacturers and scientific citizens to assist him in this projected enterprise, which will be a very expensive one.

"All persons," says the card, "subscribing five dollars, and paying it on call as the experiments progress, shall receive a copy of the work as soon as it is issued."

Recent American Patents.

Railroad Drawbridge Signal.—By Jacob Busser, of Philadelphia, Pa.—The inventor proposes to employ bells for communicating signals to the engineer of an approaching train. One bell is placed on the bridge and another at some distance therefrom, say a mile. The two bells are connected, by means of a rod running underground; a button extends from the rod above the rail. The wheels of the cars when they come in contact with the button push it down, and both bells are simultaneously struck; the engineer is thus informed that the bridge is closed, and that he may safely proceed, while the bridge-tender is notified that a train is approaching. The rod before mentioned is so connected with the drawbridge that when the latter opens all connection between the two bells is stopped, and a pressure on the buttons will not strike the signal; the orders of the engineer will be to stop unless he hears the bell. Both bells are intended to be large and loud, so that no mistake can occur.

Improved Saw Mill.—By I. Z. A. Wagner, of Philadelphia, Pa.—In ordinary saw mills it is always necessary to move the log sidewise for each new board that is cut. In the present improvement the saws are moved instead of the log. This is done by attraching the saws to screw rods which extend across the saw frames. By simply turning the rods the saw will be properly moved for each board, while the adjustment will be very accurate. This is a very convenient, labor-saving improvement. Two or more saws may be used in each frame, if desired. See engraving in No. 1, this Vol.

Improved Seed Sower.—By John German & C. B. Hoyt, of Oriskany Falls, N. Y.—This invention consists in the peculiar manner of arranging the elbow lever, by which the slide is operated, so that said slide may be operated faster or slower, according to the space or distance required between the seed, or the slide instantly thrown out of operation. The machine sows the seed in hills or drills, as desired, the various adjustments being made with great convenience.

Improvement in the Manufacture of Shirred India Rubber Goods.—By Richard McMullen, of New Brunswick, N. J.—In manufacturing common shirred goods the rubber is cut up into threads by a machine which causes much waste of stock at the sides and ends of the

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heet from which the threads are cut; much ime is also lost in examining the threads, to see that none but perfect ones are used, and much labor is expended in the frequent sharpening required by the cutters. The threads produced by the machine are placed in a stretched state at a short distance apart between the cemented surfaces of two sheets of cambric or other cloth, and the whole is then passed through rollers, which cause the two sheets of cloth to adhere together in the spaces between the threads of rubber; but there is little or no adhesion of the rubber and the cloth, and the consequence is, that the durability of the goods is much less than it would be if all the parts of the rubber adhered to the cloth.

This invention consists in an process whereby the inventor is enabled to produce shirred goods with a sheet of india rubber lining the entire surface of the cloth, thereby obviating waste, and employing a much less weight of rubber to produce a fabric of greater strength, elasticity, and durability. This object has long been sought after, but all attempts to make every part of a sheet of rubber adhere between two sheets of woven fabric have failed.

The improved process is as follows: In the first place both sides of the sheet of rubber are roughened in its manufacture, by placing it between two coarse cloths and then passing them through calender or spreading rollers between the coarse cloths after it leaves the rollers; or by passing the sheet, before it becomes hard or set, between the surfaces of two rough rollers or any other surfaces suitable to produce a roughness or a series of minute cavities all over both surfaces of the sheet. It is next vulcanized, and afterwards boiled in a solution of potash to remove the sulphur which is precipitated on the surface after vulcanization, and which would prevent adhesion. After this the cement is spread over both surfaces of the rubber, and the cloth is applied in the usual way, while the rubber is kept at such a tension as is necessary to give the goods the degree of elasticity required, and the whole is passed between rollers which have plain smooth surfaces. Plain smooth rollers are the best for this purpose, as they ensure better adhesion of all parts of the surface of the rubber and cloth; but a rib or figure may, if desired, be produced on the surface of the goods by grooving, embossing, engraving, indenting, or otherwise ornamenting the periphery of one of the rollers and covering the other roller with felt or some yielding substance. This rolling operation completes the process.

Self-Regulating Wind Wheel.—By A. Lempecke, of Mount Pleasant, Pa.—Consists in the employment of a spiral spring and weighted levers applied to the wings or sails, whereby the windmill is rendered self-regulating The wings may be set so as to resist a given force of the wind. When the wind increases and presses harder upon the wings they open, and the current passes by. A windmill of this description may be exposed to a hurricane but its speed will not be increased beyond the measure or standard to which the machine is set.

New Method of Securing Corks in Bottles.—By Henry N. De Graw, of Piermont, N. Y.—The corks of wine, soda water, and other bottles, require to be fastened in with wire or cord, otherwise they are likely to fly out, in consequence of the pressure of gas within. Mechanism is employed to fill the bottles, and also to shove in the corks; but the wiring and tying operations are done by hand, a slow and tedious business. Mr. De Graw's improvement consists in placing a metallic ring around the neck of the bottle, to which ring a couple of hooked fingers or claws are hinged. When the cork is put in, the claws turn up and project over the top of the cork, one on each side, thus rendering it impossible for the cork to escape. To remove the cork it is only necessary to open or turn the claws one side. This contrivance is intended as a permanent fixture to the bottle; the expense is trifling. By its use bottles may be filled, corked, and secured before removal from the filling machine. It is an ingenius little invention.

Horse Shoeing Apparatus—By W. P. Thomas, of Hillsboro', Ind.—Consists of a series of windlasses and harness bands, whereby the horse may be so fettered as to render it impossible for him to kick or get loose during the shoeing operation.

Mortising Tool.—By Hitchcock and Amidon, of Greenfield, Mass.—This is an improvement on the hollow square mortising chisel and auger. The novelty consists in employing a burr cutter instead of the auger, which latter, the inventors allege, allows the mortise to become filled up and choked with shavings, thus impeding the action of the implement. The burr cutter grinds the wood to dust, and permits the chisel to go through the stuff at a less expenditure of power. There are also other special advantages.

Attaching Horses to Vehicles—By James H. Wilson, of Nashville, Tenn.—The object of this invention is to prevent accidents from vicious horses. The inventor dispenses with the use of tugs in the harness, and makes a connection, for drawing the vehicle, at the forward ends of the shafts. This connection is of such a nature that it may be discharged by the mere pull of a cord; when, therefore, the horse becomes vicious, and begins to run the driver pulls the cord, whereby the vehicle becomes instantly separated from the animal, and stops.

Improvement in Stoves—By Merritt Peckham, of Utica, N. Y.—The novelty is in the construction of the barrel part of the stove, in which the fire is contained. It is made by combining together a number of plates or spokes, all radiating from a common center, like the spokes of a carriage wheel. Indeed, take a carriage wheel and cut off the fellies, leaving the spokes projecting out from the hub, and we have a good idea of the exterior appearance and construction of this improvement. The plates or spokes serve as radiators for the heat, preventing the stove from becoming red-hot, &c.

Passenger Register for Cars and Omnibuses.—By James Rodgers, of New York City.—This is a contrivance to be carried by our stages and passenger cars, for the purpose of keeping an account of the number of persons who ride. It is already in use on some of the small passenger cars in this city. The register is placed within the car in plain sight; is a clock-like contrivance, having a pointer and dial, and numbers running from 1 up to 100. When a passenger enters, the conductor pulls a strap, which strikes a gong in the register, and at the same time moves the pointer along one figure. At the end of the trip the pointer indicates the correct number of persons who have ridden.

Recent Foreign Inventions.

Locomotives Ascending Steep Inclines.—A. Regazzoli, an Italian, has taken out a patent in England for a new method of impelling railway trains up steep ascents. A cylinder having on its circumference two helices forming a double-threaded screw, is placed under and parallel to the axis of the boiler. This screw cylinder is set in motion by the engine, and it gears with a series of horizontal pulleys placed between the line of rails, which pulleys act as a left-handed screw, and thus the train is *wormed* up the incline.

Preparing Sisal Hemp, &c.—F. Burke, London, Eng., has obtained a patent for preparing the fibers of plantain, banana, and aloe, and other such plants, for making fibrous materials for textile fabrics. The invention consists in submitting the plants to the action of beaters fixed upon the periphery of a revolving drum, or roller, so that the fibers may be separated from the other vegetable matters with which they are combined. The platform upon which the plants are placed to be operated upon by the beaters, is covered with leather, and forms a sort of cushion. This is similar to the old method of beating fine sea island cotton preparatory to the carding process for making fine yarn. It is applicable, it seems, to preparing the aloe, from which sisal hemp is made, as described, in the two preceding numbers of the Scientific American.

Looms for Weaving Pile Fabrics.—C. Toye, of England, patentee.—This invention consists in applying to such looms two frames, one of which carries an adjusting bar, and has placed in it a series of wires or dents with blanks or stops between them, while the other has placed in it a carrier heddle. These frames are placed between the reed and the ordinary heddles, to regulate the distance between the foundations of double woven fabrics, and thus to regulate the length of the piles or terries of such fabrics. Also in adding to such a loom a terry wire or wires, and apparatus for working the same, by which two looped or terry fabrics may be simultaneously produced.

Steamboat Dangers.

On the evening of the 15th inst. the steam ferry-boat *New Jersey*, while on her regular trip from Philadelphia to Camden on the opposite side of the Delaware river, caught fire and was consumed, by which sad accident no less than fifty-six persons lost their lives. It seems that the boat met with a large mass of ice, which checked her progress, and at the same moment was heard the fearful cry of "fire." The flames were first seen near the smoke stack, and they spread with great rapidity. The passengers were driven to the extreme forward part of the boat, and the pilot headed her for a pier below Arch street, Philadelphia.

She came within two feet of the wharf when the pilot and the engineer were driven from theirposts by the raging fury of the flames. The pilot and several other persons then leaped upon the wharf, and an attempt was made to throw a rope to those on board, but without success. As the blazing steamer dropped away, despair seemed to seize the passengers who were huddled at the bow, and numbers of them leaped into the river, preferring to be drowned ratherthan be roasted alive.

This accident has produced a deep and painful sensation in the hearts of the people of Philadelphia and Camden; and no wonder. It is one of the most heart-rending catastrophes that has taken place in our country since the burning of the *Henry Clay* on the North river a few years ago. There were no life-preservers on the *New Jersey*, and no adequate means provided for extinguishing the flames and saving life. This is the case with all steam ferry boats. Those belonging to New York city —of which there are about fifty—are destitute of the means of saving the lives of passengers in case of fire, collision, &c. They are not provided with life-preservers, adequate life boats, nor fire extinguishing apparatus. All river steamboats ought to have a life-preserver for each passenger, a number of life-boats, fire pumps and other means for suppressing fire. These are compelled, by the new law of 1852, to carry such appliances for saving life in cases of danger; but ferry boats are exempted from the claims of this law. Now we are confident that the exempted boats are quite as liable to accidents as coasting or river steamboats, and that, instead of being exempt, they should be most strictly compelled to observe the law.

The ferry boats running to and from New York City are frequently so crowded with passengers they have scarcely room to stand It is not uncommon for 800 or 1000 persons, besides two or three dozen horses and carts, to be gathered on one of these boats. Should such vessel take fire in the middle of the river —and especially, as we have sometimes seen, when an engine is arrested at the dead points —the result would be dreadful Ferry boats are exempted from the provisions of the new Steamboat Law in not being compelled to provide safety apparatuses for accidents! Such an exemption exhibits either stupidity or something worse on the part of the framers of this law. We were informed by one who spent a great deal of time and means to get it passed, that steam ferry-boats were embraced in a clause in the original draft, but this clause was struck out through the influence of one person largely interested in ferry boat property in this city. We now call upon Congress, in the names of those who have recently lost so many near and dear relatives at Philadelphia to take this matter up at once, and pass a supplementary act to the Steamboat Law of 1852, in which shall be included all steamboats now exempt from its provisions. Also to provide that all steamboats—those carrying passengers especially—be constructed according to the suggestion of "A Ship Builder" in the last number of the Scientific American, viz., with iron bulkheads enclosing the *entire* boiler rooms, to prevent fires. Had the *New Jersey* been so constructed, the calamity we have recited would not have taken place.

On the afternoon of the 20th inst. the steam tug boat *Leviathan*, belonging to this city, took fire near Sandy Hook, and so sudden did this occur, and so swift did the flames spread that the crew had barely time to launch the lifeboat and escape. In two minutes from the time the fire was first noticed the whole upper part of the vessel was enveloped in flames. This was the finest steam tug afloat, and cost $70,000. If such an accident were to take place on any of our ferry boats when in the middle of the river all the life-preservers and life-boats in the world would not be able to save one-tenth of the passengers. "Prevention is better than cure," and we therefore hope this important amendment to the Steamboat Law will soon be made. Let not Members of Congress "deliberate in cold debate" respecting the passing of such an act, while thousands of our citizens in every State are liable every day to suffer from such accidents as those just recorded.

American Association for the Advancement of Science.

The next Annual Meeting of the abovenamed Association will be held in the city of Albany, N. Y., in the month of August next. We understand that invitations have been given to a number of the *savans* of Europe to be present on the occasion, and that some of these have been accepted. Some of the agents of the Atlantic steamers have offered a free passage to certain of these *savans*, and it is believed that the Committee of Arrangements, at Albany, will enable some of them to visit our country without its costing them anything. This is very gratifying. The Hon. Jas. S. Wadsworth has subscribed $500 to defray Liebig's expenses, and others in Albany have also subscribed liberally. "The State Museum of Natural History" is then to be inaugurated, and Wm. H. Seward is to deliver a lecture on the occasion. This, we think, is a wrong arrangement. Some well known naturalist, like Agassiz, should have been chosen to do this. "The Dudley Observatory" is also to be inaugurated on thesame week, and Edward Everett is to deliver the oration on that occasion. This we conceive is also a bad arrangement. The honor of doing this should have been awarded to a man of science—an astronomer such as Prof. Mitchell, or Pierce.

The meetings of this Association have hitherto been characterized more for the presentation of papers on curious rather than useful scientific subjects. It would please us much if our engineers and mechanics would attend this meeting, and present a strong front in the mechanical section of the Association, we would also like to see a strong body of our practical chemists present from the calico print-works, dye works, oil works, soap-works and laboratories--representatives whose science is useful—whose science is applied to every-day life.

Those who are called "our more intelligent classes," have generally incorrect ideas regarding men of science. They consider that men who are acquainted with the fossils of the earth, the movements of the stars, &c., are *the* men of science—*savans*,—while those who can build ships, and engines, and houses, and bridges, are mere mechanics; they have a kind of adoration for the former, but no respect for the latter. Now we have no hesitancy in asserting that the latter are the greatest *savans*.

Orilla's Hair Dye.

Take 5 parts of the sulphate of lead, 5 of slacked lime, 30 of water—all by weight—boil these four and a half hours together, and collect the powder formed. The moisture must all be driven off, and this powder made into paste with water, and applied to the hair.

Litharge and lime effects the same object by making them into a paste, applying the paste to the hair before going to bed, and covering up the part to which it is applied with a cloth. It bakes on the hair almost as hard as plaster, and is very disagreeable to take off, but it colors the hair black, and that most effectually.

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TO CORRESPONDENTS.

W. M., of Mass.—Stringer & Townsend, 222 Broadway, N. Y., publish the Practical Draughtsman.

J. H., of ——— We think there is a chance for a patent on your barrel-head cutter; it appears to be useful, and we do not remember to have seen an implement made like it. In all patent cases, however, there is doubt. A model will be necessary, which, with government fee, you will need to send whenever you desire to have us proceed. You did not give your address or we should have written by mail.

Y., of Pa.—Your sketch shows a common re-action wheel, center vent, having three curved shutes. You can use as few or as many of such shutes as you choose.

C. P. & Co., of N. Y.—Multiply the area of your piston in square inches, into the pressure of steam on the square inch, and into the speed of your piston per minute, and divide the product of this by 33,000. The quotient will be the horse power of your engine. Deduct one fourth of this amount for friction.

W. J. C., of N. C.—It is generally believed by those who have attended water wheels, that with the same head of water, the effect is greater during cold than warm weather: what the difference is, if any, we cannot tell. In our own experience, we have been led to believe that with the same head of water, and area of sluice, the effect was better when running a wheel during the night, than during the day.

J. A. H., of Wis.—Common lime whitewash, with the addition of some salt and a little sulphate of zinc, is excellent for outhouses and fences, but do not use salt for inside whitewashing. A whitewash of whiting—Paris white—is best for the ceilings of apartments; as it maintains its color better than lime. As it rubs off easily it is not suitable for side walls. Sulphuric acid and water is used to bite-in files.

C. W. B., of Pa.—We wished to find out the number of the *Chemist* in which the article was, to which you referred. The Dictionary does not give it.

L. B., of N. Y.—We did not say that friction matches could not be made without sulphur; but that there was no substitute for the sulphur, which is a different thing. We know that matches have been made without sulphur, by dipping them into stearine. The name of the person to whom you refer we cannot give now. There are three or four companies in this city manufacturing under Goodyear's patents—which do you mean?

R. C., of Mich.—The only way to prevent soap drying to shut it up close from the atmosphere.

C. M., of N. Y.—The meaning of inertia is well understood. "The passiveness of matter;" "resistance to a change of condition," and "tendency to preserve its condition," are terms used by different persons to explain the same thing. The subject has been exhausted, we assure you.

J. C., of Tenn.—The water wheel railroad has received more favorable attention from some persons than it really deserved.

J. C., of N. J.—We cannot give you the information desired.

H. A. E., of ———.—The monster gun at the Mersey Steel Works, may prove a failure, as you state; this will soon be decided. The Congreve ball, described by you, appears to be a destructive missile; such balls are now charged with common powder, and not with the kind you mention, so far as we know.

S. M., of Md.—In our last and in this number, you will find rules for calculating the power of your water. You can run your burs with four or eight horse power according to the speed. Mr. Vandewater, no doubt, means the area of the water inlet at the top of the flume.

C. L., of Cal.—There is a mistake in the number of feet of hose. It crept in by some unaccountable overight. The length should have been 450.

M. P., of Ind.—In the Sci. Am., Vol. 9, No. 31, you will find the claims of Carmi Hart's Veneer Cutting machine. He does not employ saws.

Henry Cavarly, of Ottowa, Ill., desires to procure the address of the patentee of the small knife and scissors grinder.

C. Thornton, of Bethel, O., wishes to procure a machine to mortise hubs, one that is good and cheap, not to cost over $60. Your subscription expires with No. 26, Vol. 12.

Lyman Kinsley, of Canton, Mass., wishes to purchase a machine for making boiler rivets.

J. S., of N. J.—Several patents have been issued for fountain pens capable of doing all you claim for yours If yours is new, a patent can be procured for it. You had better send us either a model of it or a properly executed sketch, with a description, and we will give you our opinion of its probable novelty.

S. G. J., of Texas—Your postmaster must be either ignorant of the law, or else inclined to gouge a little, if he charges you one cent. for each number of our paper, and declines to take less if payment is tendered quarterly in advance. The law expressly states that the postage per quarter, paid in advance, on the regular numbers of a newspaper mailed from the office of publication to subscribers anywhere within the United States, is as follows:—On daily papers, 39 cents per quarter, tri-weekly, 19 1-2 cents, semi-weekly, 13 cts.; weekly, 6 1-2 cts., semi-monthly, 3 cts.; monthly, 1 1-2 cents. Therefore, the legal postage on the Scientific American, if paid in advance, at the post office where received, is 6 1-2 *cts. per quarter.*

D. W., of N. Y.—Your plan of tunnels under rivers looks feasible.

O. W. O., of Mass.—We are not acquainted with a good liquid hair dye that will not stain the skin. We have been in search of such a liquid for some time, but have not yet found it.

W. S., of Canada—Aneroid barometers can be had in this city; price $25. Remit and we can have one sent. We believe they are considered just as correct as the mercurial barometers. Some persons think they are more sensitive than the latter.

M. C., of Cal.—The method of making shot is to drop molten lead from an elevation, through a sieve, from which it falls in drops into a large tub of water. The different sizes are separated afterwards; sieves of different sizes are used.

M. J., of Pa.—You will find the rule for calculating water power in the last number of the Sci. Am.

E. E., of Ill.—We appreciate your remarks about the index, and will endeavor to overcome the objections in uture.

C. C., of Pa.—An upright saw mill and engine would cost about $1600. Address Logan & Lidgerwood, No. 9 Gold street, New York.

M. A. Carroll, of Big Lick Wishes to procure the most improved lath mach

J. H., of O.—Your letter covering remittance of $16 for engraving your Universal Joint came safely to hand. The illustrations will appear in the paper in about two weeks.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, March 22, 1856:—

J. W., of N. Y., $50; S. M. P., of N. Y., $40; B. T., of Mass., $30; N. N., of Ill., $30; B. & D., of Mich., $30; J. C. P., of O., $25; C. B., Sen., of Ind., $5; I. S., of R. I., $27; S. G., of Pa., $25; L. F. C., of Me., $25; C. W., of N. Y., $55; T. & H., of N. Y., $25; C. J. C., of Pa., $30; J. C. A., of Conn., $25; J. E. N., of Ind., $10; W. B. L., of La., $50; W. N. T., of N. Y., $30; C. W., Jr., of N. Y., $35; S. F. F., of Vt., $30; W. C., of N. Y., $30; H. & A., of Ind., $60; J. W., of Del., $25. H. W. O., of Conn., $5; D. C. W., of Pa., $25; S. & S., of Conn; $25; G. & Co., of O., $200; J. M. R., of Ga., $55; J. M. Jr., of N. Y., $30; R. F. G., of Ill., $30; B. & W., of Ill., $42; S. W. R., of Mass., $30; G. P. G., of N. Y., $20; J. F. A., of N. Y., $30; J. F., of N. J., $30; H. C. H., of Mass., $25; A. L. C., of Mass., $25; T. S., of Mo., $30; O. V. D. R., of Ill., $10; J. E., of Mich., $15; J. N. A., of N. J., $32; A. W. A., of Mass. $25; M. & S., of Conn., $10; R. C. B., of Ill., $25; P. L., of Mich., $25; R. W. & D. D., of O., $250; W. B. G., of Iowa, $30; C. M. L., of N. H., $55; W. W. B., of N. Y., $29; O. T., of Wis., $55; E. H., of N. Y., $30; B. & J., of Mich., $27; J. O., of Ill., $25; J. L., Jr., of Ill., $25; M. L. P., of Texas, $60; J. H. G., of O., $30; J. R., of Pa., $90; F. F., of Ky., $55; P. S., of N. Y. $15; B. & Co., of N. Y., $35; W. D. T., of N. Y., $17; R. E., of N. Y., $29; J. W. W., of L. I., $27; H. H., of N. J. $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, March 22:—

J. J. B., of N. Y.; J. C. A., of Conn.; L. F. C., of Me.; S. & S., of Conn.; D. C. W., of Pa.; H. W. O., of Conn.; T. C., of N. Y.; J. W., of Del.; G. P. G., of N. Y.; J. B., of Ill.; C. B., Sen., of Ind.; J. C. P., of O.; S. G., of Pa.; P. M., of Ill.; I. S., of R. I.; A. W. A., of Mass.; W. W. B., of N. Y.; P. L., of Mich.; R. E., of N. Y.; A. L. C., of Mass.; T. H., of N. Y.; M. & S., of Conn.; H. C. H., of Mass.; J. M. W., of L. I.; J. H. G., of O.; J. L., Jr., of Ill.; J. O., of Ill.; C. W., of N. Y.; L. K. S., of Conn.; W. D. T., of N. Y.; B. & J., of Mich.

Important Items.

Back Numbers Volume XI—We are no longer able to supply complete sets of the present volume. The numbers which are entirely exhausted are 6, 12, 14, 15, 17, and 19. Any other numbers up to the present we are able to supply to any who may wish them. Those who order the back numbers from the commencement of the volume will receive such as we have, and their subscription will be entered up enough longer to compensate for the numbers which we are unable to supply.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Literary Notices.

London Quarterly Review—This able periodical for the present quarter contains much choice reading. The first essay is "Table Talk," and contains a vast amount of rich conversation as it flowed from the lips of Martin Luther, John Selwin, and Coleridge. An article on the London Zoological Gardens, is full of curious information for naturalists. There are 1300 mammals, birds and reptiles in those gardens, and their habits have been closely studied by the author of the article in question. The concluding Essay is on the "Results and Prospects of the War." The American publishers of the four famous foreign Quarterlies and Blackwood's Magazine, are Messrs. Leonard Scott & Co., No. 55 Gold street, this city. New volumes of these periodicals commence with the numbers for this Quarter. No man can be intelligent regarding foreign literature who is unacquainted with these Reviews.

The National Magazine—The April number of this magazine is beautifully embellished with twenty-seven illustrations, and contains several good articles from able pens. The publishers are endeavoring, by every available means, to suit the tastes of all classes of readers, by giving them not only a moral, but a highly amusing and instructive periodical. $2 a year. Carlton & Phillips, publishers, New York.

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The processes are divided into four distinct operations: 1. Expression; 2. Distillation; 3. Maceration; 4. Absorption.

1. Expression is only adopted where the plant is very prolific in its volatile or essential oil, *i. e.*, its odor; such, for instance, as is found in the pellicle or outer peel of the orange, lemon, and citron, and a few others. In these cases, the parts of the plant containing the odoriferous principle are put sometimes in a cloth bag, and at others by themselves into a press, and by mere mechanical force it is squeezed out. The press is an iron vessel of immense strength, varying in size from six inches in diameter, and twelve deep, and upwards, to contain one hundred weight or more; it has a small aperture at the bottom to allow the expressed material to run for collection; in the interior is placed a perforated false bottom, and on this the substance to be squeezed is placed, covered with an iron plate fitting into the interior; this is connected with a very powerful screw, which, being turned, forces the substance so closely together that the vessels containing the essential oils are burst, and it thus escapes. The common tincture press is indeed the model of such an instrument. The oils which are thus collected are contaminated with watery extract, which exudes at the same time, and from which it has to be separated; this it does by itself in a measure, by standing in a quiet place, and it is then poured off and strained.

2. Distillation.—The plant, or part of it, which contains the odoriferous principle, is placed in an iron, copper, or glass pan, varying in size from that capable of holding one to twenty gallons, and covered with water; to the pan a dome-shaped lid is fitted, terminating with a pipe, which is twisted corkscrew-fashion, and fixed in a bucket, with the end peeping out like a tap in a barrel. The water in the still—for such is the name of the apparatus—is made to boil, and having no other exit the steam must pass through the coiled pipe, which, being surrounded with cold water in the bucket, condenses the vapor before it can arrive at the tap; with the steam, the volatile oils, *i. e.*, perfume, rises, and is liquified at the same time; the liquids which thus run over, on standing for a time, separate into two portions, and are finally divided with a funnel, having a stop-cock in the narrow part of it. By this process, the majority of the volatile or essential oils are procured. In some few instances alcohol, (rectified spirit or wine,) is placed upon the odorous materials in lieu of water, which, on being distilled, comes away with the perfuming substance dissolved in it; which process, however, is now nearly obsolete, as it is found more beneficial to draw the oil or essence first with water, and afterwards to dissolve it in the spirit. The low temperature at which spirit boils, compared with water, causes a great loss of essential oil, the heat not being sufficient to disengage it from the plant, especially where seeds, such as cloves or carraway, are so employed. It so happens, however, that the finest odors—the *recherche*, as the Parisians say—cannot be procured by this method; then recourse is had to the next process.

3. Maceration.—Of all the processes for procuring the perfumes of flowers, this is the most important to the perfumer, and is the least understood in England; as this operation yields not only the most exquisite essences indirectly, but also nearly all those fine pomades known here as "French pomatums," so much admired for the strength of fragrance, together with "French oils" equally perfumed. The operation is conducted thus:—For what is called pomade, a certain quantity of purified mutton or deer suet is put into a clean metal or porcelain pan, this being melted by a steam heat. The kind of flowers required for the odor wanted are carefully picked and put into the liquid fat, and allowed to remain from twelve to forty-eight hours; the fat has a particular affinity or attraction for the oil of flowers, and thus, as it were, draws it out of them, and becomes itself, by their aid, highly perfumed; the fat is strained from the spents flowers, and fresh are added four or five times over, till the pomade is of the required strength; these various strengths of pomatums are noted by the French makers as Nos. 6, 12 18, and 24, the higher numerals indicating the, amount of fragrance in them. For perfumed oils the same operation is followed, but in lieu of suet, fine olive oil or oil of ben is used, and the same results are obtained. These oils are called "Huile Antiques" of such and such a flower.

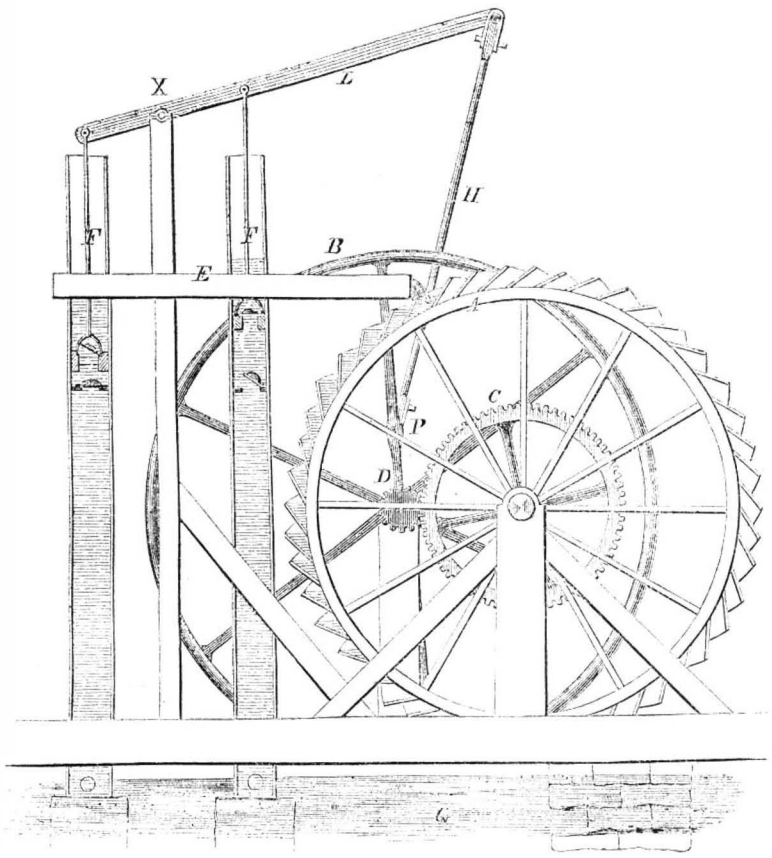
When neither of the foregoing processes give satisfactory results, the method of procedure adopted is by,

4. Absorption, or En Fleurage—The odors of some flowers are so delicate and volatile that the heat required in the previously named processes would greatly modify, if not entirely spoil them; this process is, therefore, conducted cold, thus:—Square frames, about three inches deep, with a glass bottom, say two feet wide, and three feet long, are procured; over the glass a layer of fat is spread, about half an inch thick, with a kind of plaster knife or spatula; into this the flower buds are stuck, cup downwards, and ranged completely over it, and there left from twelve to seventy-two hours.

Some houses, such as that of Messieurs Pilar and Son, Pascal Brothers, H. Faye, and a few others, have three thousand such frames at work during the season; as they are filled, they are piled one over the others, the flowers are changed so long as the plants continue to bloom, now and then, over a time of two or three months.

For oils of the same plants, coarse linen cloths are imbued with the finest olive oil, or oil of ben, and stretched upon a frame made of iron; on these the flowers are laid, and suffered to remain a few days. This operation is repeated several times, after which the cloths are subject to great pressure, to remove the now perfumed oil. Septimius Piesse.

"SELF-MOVING" WATER WHEEL.



Another "Perpetual Motion."

In our remarks relative to Willis' "Perpetual Motion," published a short time since, we referred to an ideal water wheel so planned as to pump up water and keep itself in constant motion.

We are in the frequent receipt of letters containing sketches of devices arranged on similar principles, and asking our advice relative to the proper steps necessary to be taken in order to secure such invaluable discoveries.

Since the publication named we have received from an inventor in Virginia a sketch of one of the said water wheels, which we take the liberty of engraving for the benefit of all our "perpetual motion" correspondents. The inventor informs us seriously that he wishes to have it examined by competent judges "to ascertain its utility, and whether it can be successfully applied to practical purposes." He wants to hear from us as "soon as possible."

The inventor states that the apparatus works in the following manner:—The water is first conveyed to the trough or reservoir, E, and from there it flows into the buckets of the main wheel, A; to this wheel is attached a cog wheel, C; this operates on the pinion, D, which is fastened on the outer end of the shaft of balance wheel, B, and on the other end of this shaft is attached a crank, P, which works the pitman marked H. This pitman is attached to the lever marked L, which works the plungers in pumps marked F F. The water from the bucket of the main wheel falls into the reservoir marked G, and from there is taken up by the pumps and emptied into the trough or reservoir, E. These pumps should be of the most improved plan.

How many times must we repeat the simple law relating to all moving bodies, that *action and re-action are equal;* that the force with which a wheel operates, cannot by any possibility exceed, and in actual practice cannot equal the power applied to give it motion; that if 1000 lbs. of water be thrown upon a water wheel, the lifting power realized from the wheel will be *less* than 1000 lbs. by the amount of the friction; consequently, the above "perpetual motion," and all others of its class must stand still.

"But," says the objector, "it will not require 1000 lbs. to drive the wheel; 100 lbs. are sufficient. Why then is there not a clear gain of all that the wheel lifts beyond 100 lbs. and the friction; and what shall ever stop its revolutions?"

Answer—The power applied becomes less and less at each turn of the wheel. 1000 lbs. of water, we will say, were applied to the wheel at the start, and at the first revolution the pumps raised 900 lbs.; this 900 lbs. being expended on the wheel raised 810 lbs.; the last amount raised 729 lbs., and so on down, with a steadily diminishing ratio, until the power applied to the wheel having reached 100 lbs. only 90 lbs. were lifted—or not enough to drive the wheel.

Perpetual Motion.

Messrs. Editors—I can hardly refrain from adding the following, although you may receive similar communications by every mail, and you may read it or not, as you please. It is really amusing to see the different plans and devices resorted to to construct that perpetually attempted thing, a perpetual motion.

A neighbor of mine is just on the point of success with something like the following:—He places one cistern with an air-tight cover at some distance above another with an open top, a pipe leading from one to the other. He then proceeds to pump the air from the upper cistern, when the air immediately ascends, and then descending through another pipe it constitutes the power which operates the air pump.

Having completed it once with wood, &c., it only lacks strength in some of its parts, which are soon to be replaced with iron. When his success is complete I will send you more definite information.

In the meantime do not let the idea possess your mind to such an extent as to deprive your subscribers of the regular receipt of the Scientific American. D. W. H.

Michigan, 1856.

Another Perpetual Motion.

Messrs. Editors—Seeing your illustration of the perpetual motion of Mr. E. P. Willis in your last paper puts me in mind of a contrivance that I got up a few weeks ago, and which I supposed was the perpetual motion sure. It was suggested to me by a dream, and I built several castles in the air for a few days after while I was constructing the machine. But, alas! after I had finished and set it up, and was all excitement to see the realization of my hopes I gave it the initiatory push, when lo, *it stopped*. My arrangement was the following:—

A cylinder about a foot long with an inch bore, resting on a pivot in the center, something like a scale beam. Under each end of this cylinder or beam was a spiral spring. Within the cylinder was a heavy ball. The *modus operandi* was to be this: On raising one end a little higher than the center, the ball inside of the cylinder would roll towards the other end, depressing it with some force against the spiral spring underneath it, which spring reacting would throw this end up again a little higher than the center, when the ball would roll to the other end, again depressing it, and thus it was to move on forever. The foregoing was the *theory*, but when reduced to practice would not work. G. W. M.

Rochester, N. Y., March, 1856.

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